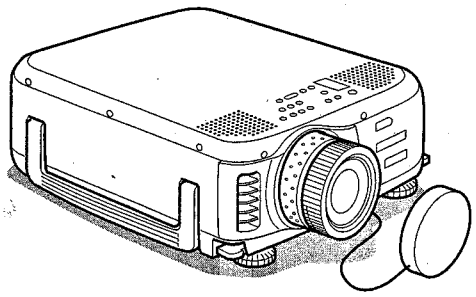
# JVC

# SERVICE MANUAL

## LCD DATA PROJECTOR

# LX-D3000ZU/ZE



## Specifications

| | |
|---|---|
| Dimensions | :(W)280mm × (H)156mm × (D)403mm |
| Mass | :6.9kg |

**Display mechanisms/Optical mechanisms**

| | |
|---|---|
| LCD panels | 1.3 inch (1,024 × 768 pixels) × 3 |
| Projection lens | Approx. 1.3× manual focus |
| Screen size | 2 inch - 300 inch |
| Light source lamp | 200W UHE lamp<br>Replacement display after about 1,400 hours of use<br>(Part No: BHNEELPLP12-SA) |

**Audio**

| | |
|---|---|
| Internal speakers | 3W × 2 (stereo) |
| Audio Out terminal | Type: 3.5mm stereo mini jack (internal speakers turn off with plug-in)<br>Output signals: 0 to 500m Vrms<br>Load impedance: 600Ω |
| Audio terminal (L/R) (VIDEO) | Type: RCA jack × 2<br>Input signal: 500mVrms/47kΩ |
| Audio terminal (Computer 1) | Type: 3.5mm stereo mini jack<br>Input signal: 500mVrms/47kΩ |
| Audio terminal (L/R) (S-Video/BNC) | Type: 3.5mm stereo mini jack<br>Input signal: 500mVrms/47kΩ |

**Operation control**

| | |
|---|---|
| Wireless remote controller | Controlled in the range of: distance of approx. 10m from front/rear, angle (horizontal) ±30°, (vertical)±15° |
| Remote terminal | Not used with this unit |

**Video I/O**

| | |
|---|---|
| Computer 1/2 terminal (Analog input) | Computer 1 type: HD-15 pin<br>(Selected by DVI-D terminal and switch)<br>Computer 2 type: BNC jack<br>(Also used as component video input terminal. Selected using onscreen menu.)<br>Computer 1/2 input signal:<br>Analog\RGB standard input level<br>0.7V(p-p)75Ω<br>MAC 0.714V(p-p)75Ω<br>Computer 1/2 sync signal:<br>Separate sync: Bipolar 1V(p-p) - 5V(p-p)<br>Composite sync: Bipolar 1V(p-p) - 5V(p-p)<br>Sync-on-green: Negative sync1V(p-p) - 5V(p-p)<br>RGB video separate sync: Negative sync 0.3V<br>Compatible range:<br>H sync 15kHz - 107kHz<br>V sync 43kHz - 120kHz |

**Video I/O**

| | |
|---|---|
| Computer 1 terminal (Digital input) | Type: DVI-D<br>(Selected using HD-15Pin and switch)<br>Input signal: digital RGB (TMDS input)<br>Compatible signals: VGA,SVGA,XGA,SXGA<br>Compatible range:<br>H sync 15kHz - 107kHz<br>V sync 43kHz - 120kHz |
| Component video terminal (input) | Type: BNC jack<br>(Also used as Computer 2 terminal. Selected using onscreen menu.)<br>Analog input level:<br>Y: 0.7V(p-p)/75Ω<br>Cb/Cr: ±0.35V(p-p)/75Ω<br>Negative sync (0.3V) or 3 value sync(±0.3V)<br>Compatible signals:NTSC60,PAL50,SECAM, 480i,480p,720p,1080i,1080p(RGB-Video only) |
| Monitor Out terminal (output) | Type: HD-15pin<br>RGB output for projector<br>Composite video, S-Video and DVI-D signals are not outputted. |
| S-Video terminal (input) | Type: Mini-DIN 4pin<br>Input signal: luminance 0.714V(p-p)<br>Chrominance 0.284V(p-p)<br>S-Video has priority over composite video. |
| Video IN terminal (composite video input) | Type: RCA jack (yellow)<br>Input signal 1.0V (p-p) negative sync 75Ω<br>Signal types: NTSC, PAL, SECAM, automatic distinction |
| Input priority sequence | Searched in order of PC1, PC2, Component Video, S-Video, Video. (Default)<br>Searched from input previously projected. |

**Mouse**

| | |
|---|---|
| Serial mouse | Mouse1, Mouse2 |
| USB mouse | Automatic detection (mouse) |
| PS/2 mouse | Type: DIN 10pin |

**Others**

| | |
|---|---|
| Power supply | 100 - 240VAC 50Hz/60Hz |
| Demand power | 285W (9W: during standby) |
| Usage/storage temperature | +5°C-+40°C / -10°C-+60°C(no condensation) |
| Usage/storage humidity | 20% - 80% / 10% - 90%(no condensation) |

**Accessories**

| | | | | | |
|---|---|---|---|---|---|
| Remote controller | Power cable | Computer cable | Audio cable | RCA video cable | RCA audio cable |
| PS/2 mouse cable | USB mouse cable | Two AA batteries | User's Manual | | |

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No.PA013
Feb. 2001

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# Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

## ● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒▒) parts are critical for safety.
   Replace only with specified part numbers.
   **Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

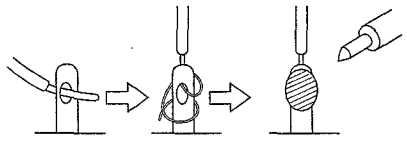

**Fig.1**

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

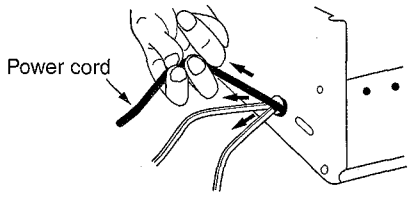


**Fig.2**

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number :** E03830-001
    2) **Required tool :** Connector crimping tool of the proper type which will not damage insulated parts.
    3) ***Replacement procedure***
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

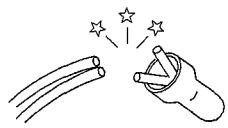


**Fig.3**

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

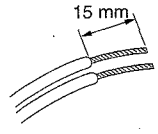


**Fig.4**

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

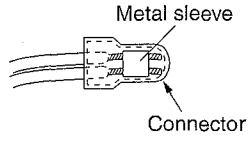


**Fig.5**

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

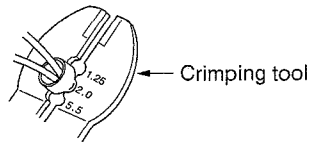


**Fig.6**

(5) Check the four points noted in Fig.7.

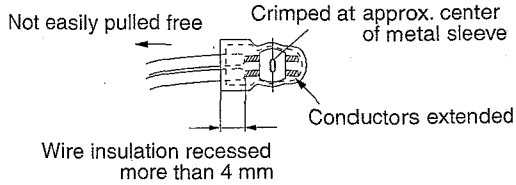
Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

**Fig.7**

## ● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

**1. Insulation resistance test**
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

**2. Dielectric strength test**
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

**3. Clearance distance**
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

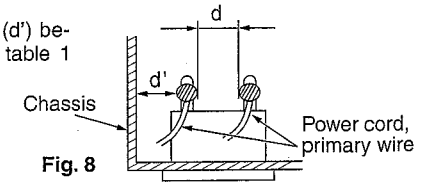


Fig. 8

**4. Leakage current test**
Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
**Measuring Method :** (Power ON)
Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

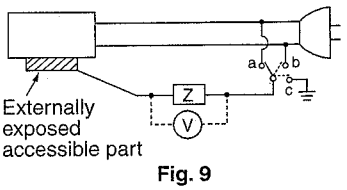


Fig. 9

**5. Grounding (Class I model only)**
Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
**Measuring Method:**
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

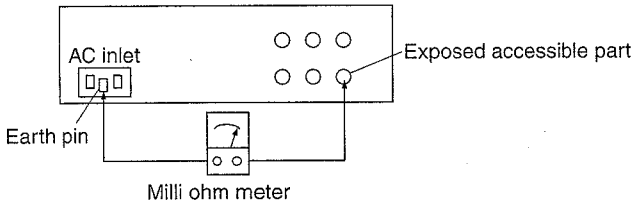


Fig. 10

**Grounding Specifications**

| Region | Grounding Impedance (Z) |
|---|---|
| USA & Canada | Z ≦ 0.1 ohm |
| Europe & Australia | Z ≦ 0.5 ohm |

| AC Line Voltage | Region | Insulation Resistance (R) | Dielectric Strength | Clearance Distance (d), (d') |
|---|---|---|---|---|
| 100 V | Japan | R≧ 1 MΩ/500 V DC | AC 1 kV 1 minute | d, d' ≧ 3 mm |
| 100 to 240 V | | | AC 1.5 kV 1 miute | d, d' ≧ 4 mm |
| 110 to 130 V | USA & Canada | 1 MΩ ≦R≦ 12 MΩ/500 V DC | AC 1 kV 1 minute | d, d' ≧ 3.2 mm |
| 110 to 130 V<br>200 to 240 V | Europe & Australia | R≧ 10 MΩ/500 V DC | AC 3 kV 1 minute (Class Ⅱ)<br>AC 1.5 kV 1 minute (Class Ⅰ) | d ≧ 4 mm<br>d' ≧ 8 mm (Power cord)<br>d' ≧ 6 mm (Primary wire) |

**Table 1** Specifications for each region

| AC Line Voltage | Region | Load Z | Leakage Current (i) | a, b, c |
|---|---|---|---|---|
| 100 V | Japan | 1 kΩ | i ≦ 1 mA rms | Exposed accessible parts |
| 110 to 130 V | USA & Canada | 0.15 μF, 1.5 kΩ | i ≦ 0.5 mA rms | Exposed accessible parts |
| 110 to 130 V<br>220 to 240 V | Europe & Australia | 2 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Antenna earth terminals |
| | | 50 kΩ | i ≦ 0.7 mA peak<br>i ≦ 2 mA dc | Other terminals |

**Table 2** Leakage current specifications for each region

**Note:** These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality

## Safety precautions

Please observe the following cautions during service and inspection.

The cabinet is to be opened only by qualified service personnel.

**⚠ Warning** Indicates contents which, if ignored, can lead to serious injury or death.

| Pictorial display | Contents | Location |
|---|---|---|
| 1) High illuminance caution | When the illumination lamp is on, do not look directly into the lens, even from a distance, because this can lead to eye injury. | Top cover |
| 2) High temperature and explosion caution | Temperature and voltage are high when the illumination lamp is on, so there is danger of burn or explosion. | Bottom chassis |
| 3) High voltage caution | There are many high voltage parts inside. Touching any of these could result in electrical shock. | Bottom chassis |

* Always observe the caution items and specification items included in this instruction manual.
* Always disconnect the power plug from the outlet before replacing the lamp.
* Do not touch the exhaust fan or the safety switch terminal when the outer cover has been removed and the power turned on for adjustment purposes.
* Work on a level, stable surface to prevent the dropping of equipment and parts.
* Use the accessory power cable and interface cable provided.

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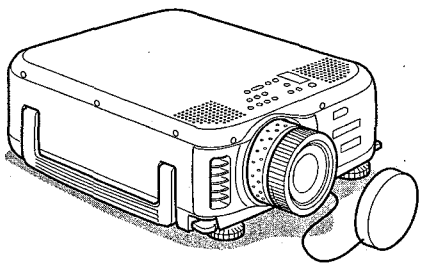
# LCD Projector

# LX-D3000ZU
# D3000ZE



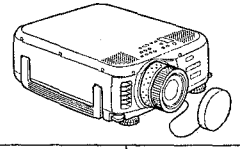
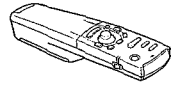
# Owner's Manual

Printed in Japan
BHNE9001278
9001278

Before use
Installation
Connections
Projection
Useful Functions
Adjustments and Setting
Troubleshooting
Maintenance
Others

# Accessory Verification

Check to confirm that the following items are included in the package when removing the projector and accessories from the box. Contact your dealer or nearest service office of our company if any items are found to be missing.

<table>
<tr>
<td colspan="2">· Projector<br>Lens Cover with string<br>  </td>
<td>· Remote Control<br>  </td>
<td>· 2AA Batteries for the remote control<br>(three-cell alkaline manganese batteries)<br> </td>
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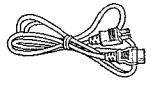
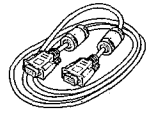
<td>· Power Cord<br>  </td>
<td>· Computer Cable<br>  </td>
<td>· Audio Cable<br> </td>
<td>· RCA Video Cable (Yellow)<br> </td>
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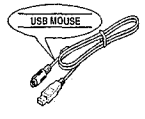
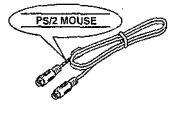
<td>· RCA Audio Cable (Red/White)<br> </td>
<td>· USB Mouse Cable<br>  </td>
<td>· PS/2 Mouse Cable<br>  </td>
<td>· Owner's Manual (this document)<br> </td>
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# ■ Features

- **Crystal clear screen**
  Clarity has been vastly improved.
  Provides crystal clear projections even in bright areas, perfect for presentation purposes.
- **Wide range of display resolution**
  Uses a high-resolution liquid-crystal panel.
  (1024×768)
- **Compact and light**
  A compact body makes it easy for carrying around.
  ( Approximately 6.9kg, 15.2 litres)
- **DVI-D* port that supports digital output**
  Fitted with a DVI-D Port for digital input purposes. This can also be connected to a computer's digital output port.

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# ■ Using this manual

## Symbol displays

A variety of pictures displays have been used in this manual and on the actual product to ensure that the projector is used correctly and safely in order to prevent risks to users and other people, and to prevent damage to property. Explanations for these displays are provided below. Ensure that they are fully understood before reading this manual.

| | |
|---|---|
| ⚠ Warning | Displays details that may result in death or injury if ignored. |
| ⚠ Caution | Displays details that may result in injury or damage to property if ignored. |

Point: Includes supplementary explanations and useful tips.
Reference: Indicates reference pages
*: Refer to the terminology (see page 91)

- Usage of the terms"this unit" and "this projector" in this manual
  The terms "this unit" and "this projector" appear regularly in this manual, and these terms also cover the accessories supplied with the projector and other optional products.
- The projection distances, illustrations and screen sizes apply to when the standard lens is in use.

# ■ Safety Precautions

Read and observe the following safety precautions to ensure safe use of the equipment.

## ⚠ Warning

- **If any of the following abnormalities occur, switch off the power supply immediately, remove the plug from the power socket and contact your dealer or nearest service office of our company.**
  - The emission of smoke, strange odors or strange noises.
  - Faults, such as images not being able to be projected or no sound being emitted.
  - When water or foreign objects have entered the inside of the unit.
  - When the unit has been dropped or the case damaged.

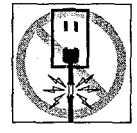
  Continuation of operations under these conditions may result in the outbreak of fire or electric shocks.
  Repairs should never be attempted by the user.

- **The cabinet to the unit should never be opened by anyone other than our service personnel.**
  The inside of the projector contains many high-voltage parts that may result in the outbreak of fire, electric shocks or other incidents.

- **Never use an electrical voltage other than that displayed.**
  The use of a voltage other than that specified may result in the outbreak of fire or electric shocks.

- **Never use damaged Power Cord.**
  Failure to observe this may result in the outbreak of fire or electric shocks.
  Also ensure that the following points are strictly observed.
  - Never make any modifications to the Power Cord.
  - Never place anything heavy on the Power Cord.
  - Never bend, twist or pull the cable.
  - Ensure that the cable is not installed near heaters.

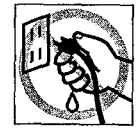
  Contact your dealer or nearest service office of our company if the power cord becomes damaged.



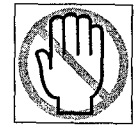
- **Never look into the lens when the power is switched on.**
  An extremely strong light is emitted that may cause sight defects. Special attention must be paid by households with children.

## ⚠ Warning

- **Take care when handling power plugs and power connectors.**
  Failure to observe these instructions may result in the outbreak of fire or electric shocks.
  Observe the following precautions when handling power plugs and power connectors.
  - Never connect too many appliances to a single socket.
  - Never use plugs or connectors to which dust, dirt or other foreign objects have adhered.
  - Ensure that the plugs and connectors are firmly inserted as far as they will go.
  - Do not atempt to plug in plugs or connectors with wet hands.
  - Do not pull the Power Cord when disconnecting plugs and connectors. Always ensure that the actual plug or connector is firmly gripped.

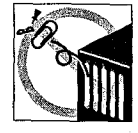


- **A large number of glass products, such as lenses and lamp mirrors, are used inside the projector.**
  If any of these parts should break, handle them with extreme care to avoid injury and then contact your dealer or nearest service office of our company and request repairs.

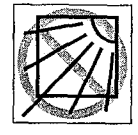


- **Never places vases or containers that contain liquid on top of the projector.**
  If the water is spilt and enters the outer case, it may result in the outbreak of fire or electric shocks.

- **Never insert or drop metal or inflammable objects, or any other foreign objects into the suction inlets and ventilation outlets on the projector.**
  Failure to observe this may result in the outbreak of fire or electric shocks.



- **Never place the projector or the battery-operated remote control in locations with excessive temperatures, such as in vehicles with closed windows, in areas subject to direct sunlight, or near the fan outlets of air-conditioners and heaters.**
  Failure to observe this may result in heat-distortion that would have an adverse affect on the contents of the projector, and may result in the outbreak of fire or electric shocks.



- **Do not block or look inside the main unit's ventilation outlet.**
  Failure to observe this may result in injury through glass shreds if the lamp is broken.

## ⚠ Caution

- **Never stand on the projector or place any heavy objects on it.**
  Failure to observe this may result in it dropping over, becoming damaged, or causing injury.

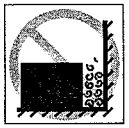
- **Never place the projector on unstable surfaces, such as wobbly tables or slanted surfaces.**
  Failure to observe this may result in it dropping over, becoming damaged, or causing injury.

- **Do not place or store the projector within the reach of children's hands.**
  Failure to observe this may result in it dropping over, becoming damaged, or causing injury.

- **Do not place the projector in humid or dusty locations, or in locations where it would be subject to oil steam or water steam, such as kitchens or near humidifiers.**
  Failure to observe this may result in the outbreak of fire or electric shocks.

- **Never block the projector's suction inlets or ventilation outlets. Failure to observe this may result in the build up of high temperatures inside the projector, leading to the outbreak of fire. Do not place the projector in the following locations.**
  - In narrow, badly ventilated areas, such as in cupboards or in bookcases.
  - On top of carpets, matresses or blankets.
  - Never cover the projectors with table cloth or other material.
  - Places where the projector will come into direct contact with the air flow from an air conditioner.

  If the projector is installed at a window, leave a space of at least 20 cm between the projector and the wall.



- **Always ensure that the plug has been disconnented from the power socket when it is not to be used.**
  Failure to observe this may result in the outbreak of fire.

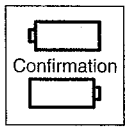
## ⚠ Caution

- **Always ensure that the power has been switched off, the plug has been disconnected from the power socket, and all other cables have been disconnected when moving the projector.**
  Failure to observe this may result in the outbreak of fire or electric shocks.

- **Never attempt to remove the lamp immediately after the projector has been used. Wait for the projector to cool down sufficiently by leaving it for at least sixty minutes after the power supply has been switched off.**
  Failure to observe this may result in burns or other injuries.

- **Misuse of the batteries may result in damage to the batteries and subsequent leakages, leading to the outbreak of fire, injury and product corosion. Observe the following precautions to ensure safety.**
  - Never use combinations of different batteries, or old batteries together with new batteries.
  - Never use batteries that are not specified in the instruction manual.
  - If liquid should leak from the battery, wipe up the leakage with a cloth and then replace the battery accordingly.
  - Replace the batteries immediately when the time for replacement arrives.
  - Remove the batteries when the projector is not to be used for a long period of time.
  - Never apply heat to the batteries, or place them in naked flames or water.
  - Ensure that the batteries are inserted in accordance with the correct polarity (+ and -).
  - If any liquid that has leaked from a battery gets onto the hands, wash it off immediately with water.

  Batteries must be disposed of in accordance with the regulations in effect in each relevant area.




- **Ensure that the electric plug and connectors have been disconnected from their sockets when performing maintenance tasks.**
  Failure to observe this may result in electric shocks.

## Safety Precautions

- Using the projector in environments outside of the permissible temperature range (+5 °C to +40 °C) may result in the projected images and displays becoming unstable and excessive loads on the fan, leading to defects and damage to the fan. Attention must be paid particularly when the projector is suspended near to the ceiling, as heat tends to build up in such locations, leading to a rise in temperature.
- Storing the projector outside of the permissible temperature range (-10 °C to +60 °C) may result in damage of the case. Take special care to avoid placing the equipment in direct sunlight for a long period of time.
- Do not use the projector with the lens cover still in place. The heat generated by the lens may cause the cover to become malformed.
- The liquid crystal display panel has been manufactured with high-accuracy technology and contains more than 99.99% active pixels. However, note that there is a possibility of 0.01% of missing pixels and pixels that will be constantly illuminated.
- Note that there are cases where slight color blurring will occur owing to the characteristics of the liquid crystal panel. This is not a defect.
- Ensure that all accessories are used as stipulated. Failure to observe this may result in the displays becoming unstable and vivid projections being impossible. It may also result in damage to the projector's internal parts, leading to accidents and injuries.
- Never reset the lamp on time unless it has not been replaced with a new one. Failure to observe this may result in the lamp being damaged or extinguished, and damage to the projector.
- Do not allow a single still picture to be projected for long periods of time, or project extremely bright images. Failure to observe this may result in the image becoming burnt. Take particular care with video game, computer program screens and similar images. Normal video playback images will not cause any problems.





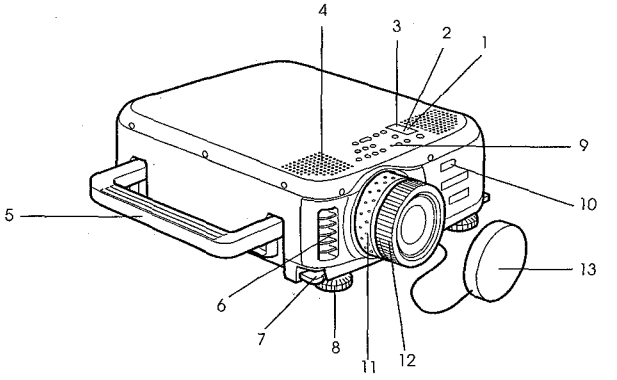
# Before using this equipment

This section provides explanations on parts and part names, and the items that should be verified before operating the remote control.

## ■ Parts, Names and Operations

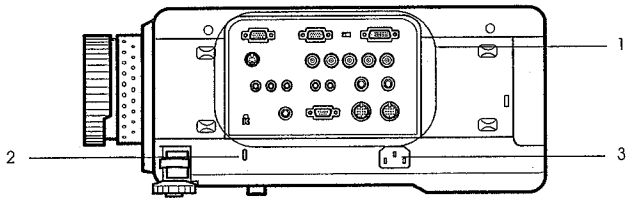
### Projector

- **Front Panel**



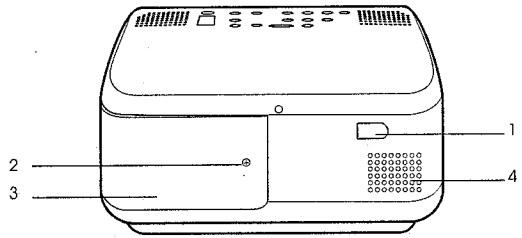

1 Operation Indicator
2 Lamp Indicator
3 Temperature Indicator
4 Speaker
5 Handle
6 Ventilation Outlet
7 Foot Adjust Lever
8 Front Foot
9 Operation Panel
10 Remote Control Receiver
11 Zoom Ring
12 Focus Ring
13 Lens Cover

## ● Side Panel




**1 I/O Port**
**2 Theft-protection Lock**
**3 Power Inlet**

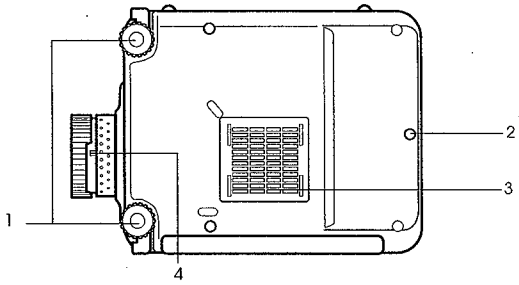
## ● Back Panel




**1 Remote Control Receiver**
**2 Screw holding the lamp cover**
**3 Lamp Cover**
**4 Lamp Suction Inlet**

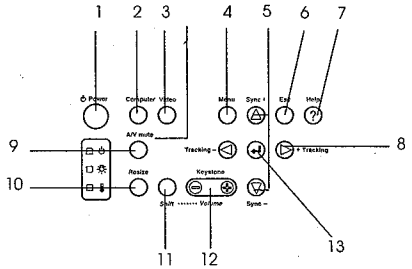


## ● Rear Panel




**1 Front Foot**
**2 Rear Foot**
**3 Air Filter (suction inlet)**
**4 Lens Removal Lever**
This lever is only to be used when replacing the lens with optional attachment lenses.

## ● Operation Panel




**1 [Power] button (see page 42, 45 )**
Switches the power supply on and off.

**2 [Computer] button (see page 43)**
Switches the computer #1 image between BNC (RGB) and IM2 images.

**3 [Video] button (see page 43)**
Switches the images between video images (Video), S video (S-Video) and component video (BNC (YCbCr, YPbPr)).

**4 [Menu] button (see page 65)**
Displays and cancels the menu.

**5 [Sync] button (see page 51)**
Makes the necessary adjustments when the screen is out of focus or flickering. This button functions as the up and down key when the menu or help text are being displayed.

**6 [Esc] button (see page 66)**
Ends functions that are currently in use. Returns the screen to the previous stage when this is pressed during menu and help text display.

**7 [Help] button (see page 53)**
Displays the methods of solving problems. Press this button when trouble occurs.

**8 [Tracking] button (see page 51)**
Performs the necessary adjustments when stripes appear on the screen. Moves left and right when this is pressed during menu and help text display.

**9 [A/V mute] button (see page 55)**
Temporarily erases the image and sound. Projection is resumed when this button is pressed once more or when the volume control is adjusted or when the menu is displayed. User logos can also be set up for projection when in the mute mode.

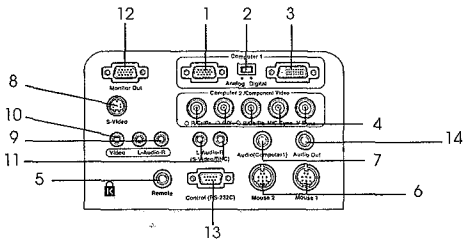
**10 [Resize] button (see page 56)**
Switches between the window display and the resizing display when computer images are being projected. Switches the aspect ratio between 4:3 and 16:9 when video images are being projected.

**11 [Shift] button (see page 62)**
Adjusts the volume when pressed simultaneously with the [Volume (Keystone)] button.

**12 [Keystone] button (see page 49)**
Performs the necessary adjustments when the screen distorts into a trapezoid shape.

**13 [↵(Enter)] button (see page 50, 65)**
- Sets the menu item and moves onto the lower stage.
- Optimizes the computer image when the menu or help text are not displayed. (Switches the input resolution across to [Auto] when set for [Manual]).

## ● I/O Ports




**1 Computer #1-mini D-Sub 15 Port**
Inputs the computer's analog image signals.

**2 Change-over Switch**
Switches the valid port for Computer #1 across to either mini D-Sub15 (analog) or DVI-D (digital). Operate the swich with the tip of a ballpoint pen or other pointed object.
- Be sure to set before inputting the signal.

**3 Computer #1-DVI-D Port**
Inputs the computer's digital image signals.

**4 Computer #2 /Component Video Port**
· R/Cr/Pr · G/Y · B/Cb/Pb · H/C Sync · V Sync
Inputs the computer's RGB image signals, the A/V equipment component image signals (color differential signal) or the RGB image signals.

**5 Remote Port**
Cannot be used with this projector.

**6 Mouse 1/2 Port**
Connected to the computer when the remote control is to be used as a wireless mouse.

**7 Audio (Computer1) Port**
Inputs the audio signals from the computer and A/V equipment connected to the Computer #1 Port.





**8 S-Video Port**
Inputs the A/V equipment's S image signals.

**9 L-Audio-R (S-Video/BNC) Port**
Inputs the audio signals from the computer and A/V equipment connected to the BNC port or the S-Video port.

**10 Video Port**
Inputs the A/V equipment's component image signals.

**11 L-Audio-R Port**
Inputs the A/V equipment's sound signals.

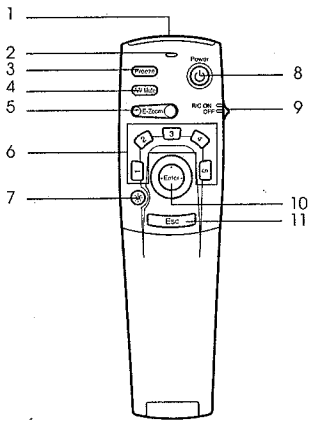
**12 Monitor Out Port**
Outputs the projected image signals from the computer to an external monitor. Output from the DVI-D Port or video equipment is not possible.

**13 Control (RS-232C) Port**
Connected with a serial cable (RS-232C) available on the open market when the optional projector software is to be used with a computer.
Used when controlling the projector with a computer. Consult your dealer or nearest service office of our company for further details.

**14 Audio Out Port**
Outputs the projector's sound signals.
- When a cable is connected here, no audio will be output from the speakers on the projector main unit.

## Remote Control

### ● Front Panel




**1 Remote control light-receiving area**
Outputs the remote control unit's signals.

**2 Indicator**
Illuminated when the remote control unit signals are being output.
· The light will not be output if batteries are weak, or the switch is off.

**3 [Freeze] button (see page 55)**
Temporarily freezes the image. Press this button once more to cancel the freeze mode.

**4 [A/V Mute] button (see page 55)**
Temporarily erases the images and sound. Projection will be resumed if this button is pressed once more or the volume is adjusted.

**5 [E-Zoom] button (see page 57, 61)**
Enlarges and reduces the image. Enlarges the sub-screen when using P in P images. Press the [Esc] key to cancel this mode.

**6 [Effect] button (see page 58)**
Executes the allocated effect function. Press the [Esc] key to cancel this mode.

**7 [☼(Light)] button**
The remote control button will be illuminated for approximately ten seconds.

**8 [Power] button (see page 42, 45)**
Switches the power supply to the projector on and off.

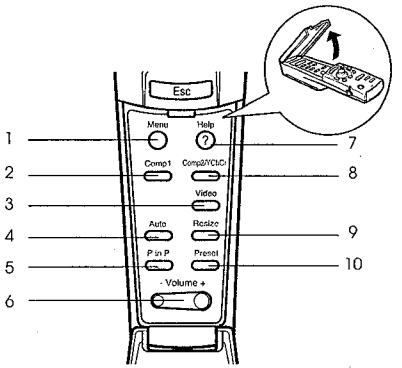
**9 [R/C ON OFF] switch (see page 42, 46)**
Switches the remote control unit on and off. The remote control unit cannot be used for operations when this switch is not set at [ON].

**10 [Enter] button (see page 36, 65)**
· Sets the menu item when pressed, and then moves onto the lower stage. Becomes a cursor key to select the menu items when moved up, down, left or right.
· This function operations with a left-hand click on the mouse when computer images are being projected. The pointer will move when this button is moved up, down, left or right.



**11 [Esc] button (see page 36, 66)**
· Ends the function being used. Returns to the previous stage when the menu or help text is being displayed.
· This function operations with a right-hand click on the mouse when computer images are being projected.

### ● Inside of the Cover




**1 [Menu] button (see page 65)**
Displays and ends the menu.

**2 [Comp1] button (see page 43)**
Switches to the image from computer 1 port. Switches to the DVI-D image when the switch is set to Digital (right-hand position).

**3 [Video] button (see page 43)**
Switches between video images (Video) and S-video images (S-Video).

**4 [Auto] button (see page 50)**
Optimizes the computer image.

**5 [P in P] button (see page 61)**
Displays the video image within the computer image or the video image as a sub-screen. This function is cancelled by pressing this button once again.

**6 [Volume] button (see page 62)**
Adjusts the volume.

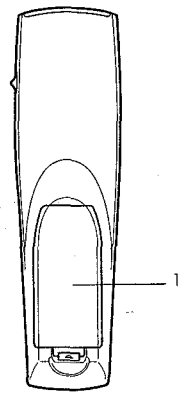
**7 [Help] button (see page 53)**
Displays the method of solving problems. Press this button when trouble occurs.

**8 [Comp2/YCbCr] button (see page 43)**
Switches between the images from the BNC port.

**9 [Resize] button (see page 56)**
Switches between the window display and the resizing display when computer images are being projected. Switches the aspect ratio between 4:3 and 16:9 when video images are being projected.

**10 [Preset] button (see page 51)**
Calls out the preset computer input settings.

● **Rear Panel**




**1 Battery Cover**

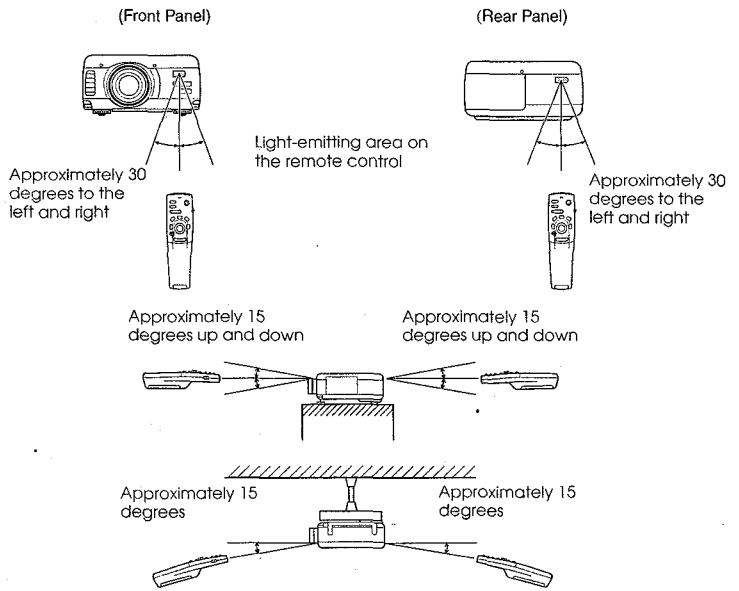


## Range of Remote Control Operations

Depending on the distance and angle from the main unit's light receiving area, there are cases where the remote control will not function. Ensure that the remote control is used within the following conditions:

● **Operable distance: Approximately 10 meters**

● **Operable range:**


(Front Panel)
(Rear Panel)
Light-emitting area on the remote control
Approximately 30 degrees to the left and right
Approximately 30 degrees to the left and right
Approximately 15 degrees up and down
Approximately 15 degrees up and down
Approximately 15 degrees
Approximately 15 degrees

**Point**

- Ensure that the [R/C ON OFF] switch is set at [ON] when using the remote control unit.
- Aim the remote control at the projector's light-receiving area.
- There are cases where the operable distance (approximately 10 meters) of the remote control is diminished when signals are reflected off screens depending on the type of screen in use.
- Ensure sunlight or florescent light does not affect the projector's light receiving area.
- If the remote control will not function or malfunctions, there is a possibility that the batteries need changing. In this event, replace the batteries accordingly.

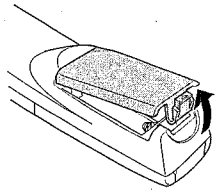
## Inserting the Remote Control Batteries

The remote control batteries are inserted in accordance with the following procedure:

| ⚠ Caution |
| --- |
| Ensure that unused batteries of the same type are used. |

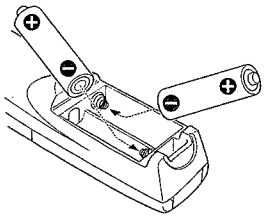
**1 Remove the Battery Cover.**

Apply pressure to the clip holding the Battery Cover, and then lift it upwards.



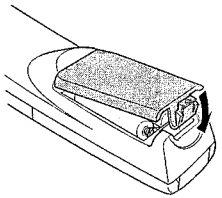
**2 Insert the batteries.**

Ensure that the batteries are aligned correctly with the "+" and "-" labels on the remote control.



**3 Replace the cover.**

Apply pressure to the battery cover until it clicks firmly into place.



**Point**

- Specified batteries:Two three-cell alkaline manganese batteries (LR6).
- The batteries should be replaced approximately once every three months when used for thirty minutes per day.





# Installation

**This section provides an example of projector installation, and explanations on the projection distances and projection angles.**

## ■ Installation Procedure

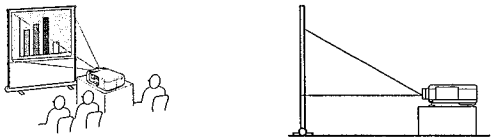
Determines the projection angle and projection distance to ensure the most suitable screen display.

| ⚠ Caution |
| --- |
| · Using the projector in environments outside of the permissible temperature range (+5 °C to +40 °C) may result in the projected images and displays becoming unstable and excessive loads on the fan, leading to defects and damage to the fan. Attention must be paid particularly when the projector is suspended near to the ceiling, as heat tends to build up in such locations, leading to a rise in temperature.<br>· There are cases where material or paper get sucked on to the Air Filter on the rear panel when the projector is in use, so attention must be paid to prevent this.<br>· Never block the projector's suction inlets or ventilation outlets. Failure to observe this may result in the build up of high temperatures inside the projector, leading to the outbreak of fire. Do not place the projector in the following locations.<br>· In narrow, badly ventilated areas, such as in cupboards or in bookcases.<br>· On top of carpets, matresses or blankets.<br>· Never cover the projectors with table cloth or other material.<br>· Places where the projector will come into direct contact with the air flow from an air conditioner.<br>If the projector is installed at a window, leave a space of at least 20 cm between the projector and the wall. |

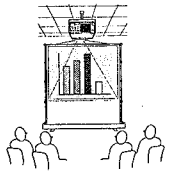
## Installation example

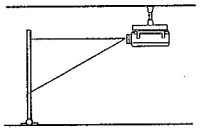
The projector may be installed in locations that conform to the installation conditions and projection methods.

**Viewing projected images from the front**



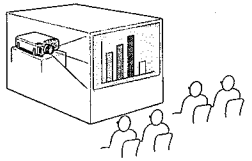
### Viewing projected images from the front with a ceiling suspended projector

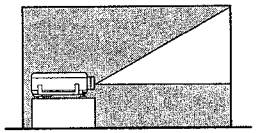




- Set the suspension setting to [ON] when the projector is to be suspended upside down from the ceiling. (see page 71)
- Use the special ceiling mount when the projector is to be suspended upside down from the ceiling. The special suspension brackets can be ordered from your dealer or nearest service office of our company.

### Viewing images projected onto half-transparent screens from the rear.



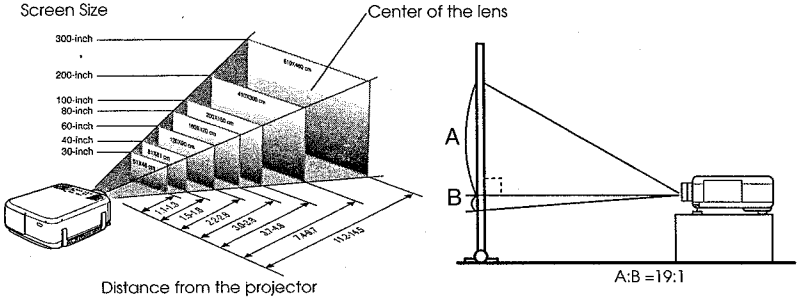


- Set the rear parameter to [ON]. (see page 71)
- Ceiling suspension is also possible with the use of the optional ceiling suspension unit.

## Screen size and projection distance

Determines the distance that the screen must be from the lens in order to obtain the required screen size.
The projector's Standard Lens is approximately a 1.3x zoom lens and the largest screen size is about 1.3 times the size of the smallest screen.
Using the following table for reference purposes, install the projector so that the screen size is smaller than the screen. (The values in the table are reference values.)

| Screen Size (4:3) | Approximate Projection Distance | A | B |
|---|---|---|---|
| 30-inch (61×46cm) | 1.1m to 1.3m | 44cm | 2cm |
| 40-inch (81×61cm) | 1.5m to 1.8m | 58cm | 3cm |
| 60-inch (120×90cm) | 2.2m to 2.8m | 85cm | 5cm |
| 80-inch (160×120cm) | 3.0m to 3.8m | 114cm | 6cm |
| 100-inch (200×150cm) | 3.7m to 4.8m | 142cm | 8cm |
| 200-inch (410×300cm) | 7.4m to 9.7m | 285cm | 15cm |
| 300-inch (610×460cm) | 11.2m to 14.5m | 437cm | 23cm |



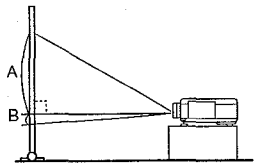

**Point**

- The projection distances listed above are the distances when the standard lens is in use. If optional lenses are to be used, refer to the relevant instruction manuals for further details.
- The screen will become smaller when the keystone correction function is used.

## Projection angles

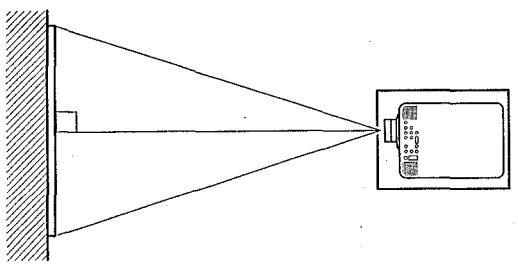
The optimum projection screen is acquired by placing the center of the projector's lens and a right-angle to the screen.

**When viewing from the side**




A:B =19:1

**When viewing from the top or bottom**



**Point**

Although the projection angle can be adjusted with the front foot (see page47 ), there are cases where the screen will distort into a trapezoid shape. Adjust trapezoidal distortion with the keystone correction function. (see page49 )





# Connections

**This section provides explanations on connecting the projector to computers and video equipment.**

## ■ Connecting the projector to a computer

Switch off the power supply to the projector and computer before attempting to make the connection.

### Eligible computers

There are computers with which connections cannot be established and computer that cannot be used for projection purposes even though a connection has been established. First of all, it is necessary to confirm that a connection can be established with the computer in use.

- **Conditions for eligible computers**

**Condition #1: The computer must be fitted with an image signal output port**

Check to ascertain that the computer is fitted with ports that will output image signals, such as the [RGB Port], the [Monitor Port] and the [Video Port]. If you have trouble confirming this, refer to chapter on external monitor connections in the computer's instruction manual.

There are computers, such as combined computer/monitor models and laptop models, that do not allow connections or for which optional external output ports must be purchased.

**Point**

Depending on the computer, there are cases when it is necessary to switch the image signal output with the connection key (Fn, etc.,) and the settings.

| NEC | Panasonic | Toshiba | IBM | SONY | FUJITSU | Macintosh |
|---|---|---|---|---|---|---|
| Fn+F3 | Fn+F3 | Fn+F5 | Fn+F7 | Fn+F7 | Fn+F10 | The control panel monitor and sound to be set to mirroring after rebooting. |

The table shown above provides examples for certain products. Refer to the computer's instruction manual for further details.

**Condition #2: The resolution and frequency of the computer must be within the boundaries listed in the chart on the next page.**

Projection will not be possible if the computer does not support the output image signal resolutions and frequencies shown in the chart on the next page (there are cases where projection is possible, but vivid projection will not be possible).

Confirm the image signal resolution and frequency with the computer's instruction manual.

There are also computers available that allow the output resolution to be amended. In this case, amend the parameters to fit within the ranges shown in the chart on the next page.

| Signal | Refresh Rate (Hz) | Resolution (Dots) | Pixels (dots) Used During Resizing Display (Resize On) | Pixels (dots) Used During Real Display (Resize Off) | Remarks |
|---|---|---|---|---|---|
| PC98 | | 640×400 | 1024×640 | 640×400 | |
| VGACGA | | 640×400 | 1024×640 | 640× 400 | |
| VGAEGA | | 640× 350 | 1024×560 | 640×350 | |
| VGA | 60 | 640× 480 | 1024×768 | 640× 480 | |
| VESA | 72/75/85/100/120 | 640×480 | 1024×768 | 640×480 | |
| SVGA | 56/60/72/75/85/100/120 | 800×600 | 1024×768 | 800×600 | |
| XGA | 43i/60/70/75/85/100/120 | 1024×768 | 1024×768 | 1024× 768 | |
| SXGA | 70/75/85/100 | 1152×864 | 1024×768 | 1152× 864 | Virtual (Partial) Display |
| SXGA | 60/75/85 | 1280× 960 | 1024×768 | 1280×960 | Virtual (Partial) Display |
| SXGA | 43i/60/75/85 | 1280×1024 | 960×768 | 1280×1024 | Virtual (Partial) Display |
| SXGA+ | | 1400×1050 | 996×746 | 1400×1050 | Virtual (Partial) Display |
| | | 1440×1080 | 1024×768 | 1440×1080 | |
| UXGA | 48i/60/65/70/75/80/85 | 1600×1200 | 1024×768 | 1600×1200 | Virtual (Partial) Display |
| MAC13 | | 640× 480 | 1024×768 | 640×480 | |
| iMAC VGA | | 640× 480 | 1024×768 | 640× 480 | |
| iMAC SVGA | | 800×600 | 1024×768 | 800×600 | |
| MAC16 | | 832×624 | 1024×768 | 832×624 | |
| MAC19 | | 1024×768 | 1024×768 | 1024×768 | |
| iMAC XGA | | 1024×768 | 1024×768 | 1024×768 | |
| MAC21 | | 1152×870 | 1016×768 | 1152×870 | Virtual (Partial) Display |
| NTSC | | | 1024×768 | 1024×576 | 4:3 ↔ 16:9, Selectable |
| PAL | | | 1024×768 | 1024×576 | 4:3 ↔ 16:9, Selectable |
| SECAM | | | 1024×768 | 1024×576 | 4:3 ↔ 16:9, Selectable |
| SDTV (480i/P) | 60 | | 1024×768 (4 : 3) | 1024×576 (16 : 9) | |
| HDTV (720P)16:9 | 60 | | 1024×576 | 1024×576 (16 : 9) | |
| HDTV (1080i)16:9 | 60 | | 1024×576 | 1024×576 (16 : 9) | |

**Point**

Refer to page 99 for further details on horizontal scan frequencies and vertical scan frequencies.

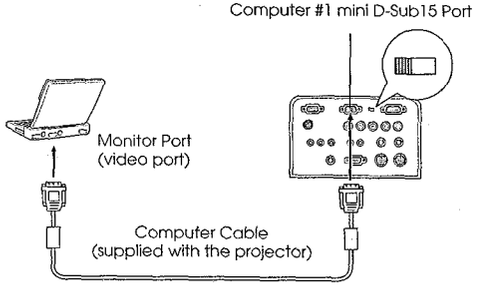
## In the case of the mini D-Sub 15 pin

**⚠ Caution**

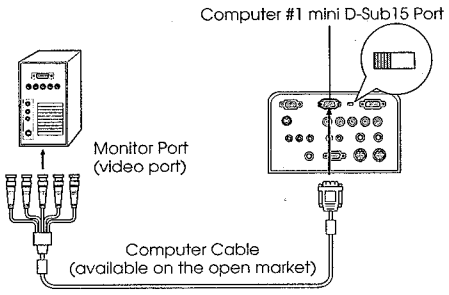
- Use the cable supplied with the projector. The use of cables longer that the one supplied with the projector may result in the displays becoming unstable and vivid projections being impossible.
- Switch off the power supply to the projector and computer before attempting to make the connection. Failure to observe this may result in damage.
- Confirm the shape of the cable connectors and ports, and the port signal types before connecting up the equipment. Forcing connectors in upside-down, the wrong shape connectors or different signal types may result in defects or damage to the equipment.

- Connect the computer's monitor port to the Computer #1 mini D-Sub 15 Port on the projector with the computer cable supplied.
- Set the switch to the analog setting (left-hand side) with the tip of a ballpoint pen or other pointed object.

### ● When the monitor port is the D-Sub 15 pin.



● **When the monitor port is the 5BNC (When connected to the second computer)**



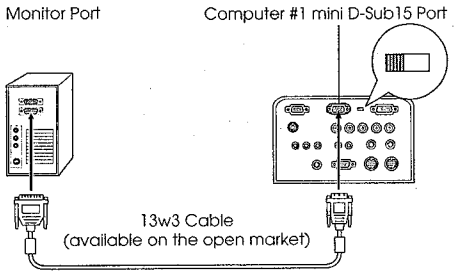

**Point**

- Do not bind the Power Cable and the Computer Cable together. Failure to observe this may result in video noise and malfunctions.
- An adapter may be required when making the connection depending on the stand of the computer's port. Refer to the computer instruction manual for further details.
- There are cases where the MAC desktop adaptor and MAC monitor adapter available on the open market are required when connecting the projector to a Macintosh.
- It is possible to establish connections with both the Computer #1 Port and the Computer #2 Port when two computers are to be connected.

● **When the monitor port is 13w3**

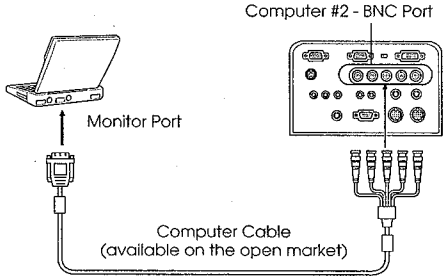
The Computer #1 Port is also connected to the D-Sub 15 port with the use of the conversion cable when the 13w3 port is used for connecting the computer's monitor port to a work station.

- The projector's computer #1 mini d-Sub 15 Port is connected to the computer's monitor port (13w3) with the 13w3 ↔D-Sub 15 cable (available on the open market).
- Set the switch to the analog setting (left-hand side) with the tip of a ballpoint pen or other pointed object. .



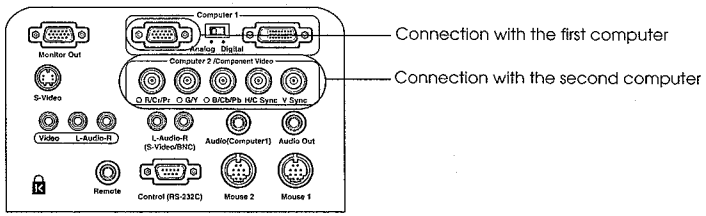

## In the case of 5BNC

Connect the computer's monitor port to the projector's Computer # 2-BNC port with a computer cable (available on the open market).




**Point**

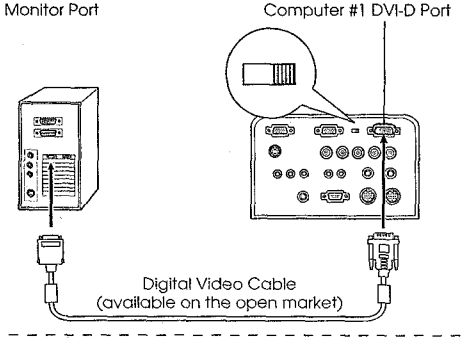
- Set the BNC parameter in the menu to [RGB] when establishing the connection. (see page 69)
- Establish the connection with a 5BNC <--> 5BNC cable (available on the open market) when the computer's monitor port is a 5BNC port.
- Connections can be made to both computer #1 port and computer #2 port when two computers are to be connected.



## In the case of DVI-D*

Digital signals are output to the projector without amendment if a digital video card for liquid crystal displays and output port are mounted onto the computer.

- Connect the computer's digital output port to the projector's Computer # 1-DVI-D port with a digital video cable (available on the open market). Select a cable that fits the computer's port (DVI-D/DFP).
- Set the switch to the digital setting (right-hand side) with the tip of a ballpoint pen or other pointed object.




**Point:**

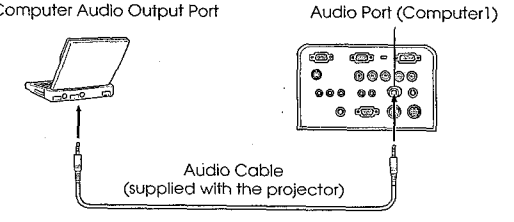
- There are cases where the computer must be set up in order to switch the computer output to the DVI-D. Refer to the instruction manual for the computer for further details.
- If you are simultaneously connecting a computer using a mini D-Sub 15pin connector, connect it to the 5BNC connector.

## Sound connection

The projector is equipped with two built-in speakers capable of outputing a maximum of 3W, and it is also possible to output computer sound from the projector's speakers.

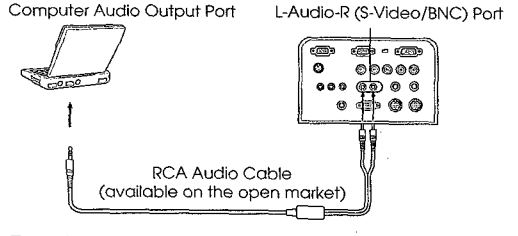
### ● Connecting the computer to Computer #1

Connect the projector's Audio (Computer1) Port (stereo mini jack) to the computer's audio output port with the Audio Cable supplied.




### ● Connecting the computer to Computer #2

Connect the computer's audio output port to the projector's L-Audio-R (S-Video/BNC) port (RCA pin jack) with the RCA audio cable (sold on the open market).

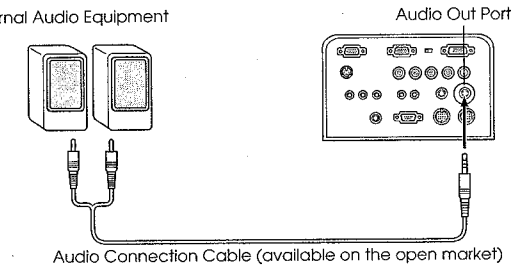



**Point**

The audio signals output the selected image's sound.

## Connecting external audio equipment

It is possible to enjoy dynamic sound by connecting the Audio Out port on the projector to a PA system, an active speaker system, or other speakers equipped with built-in amplifiers.



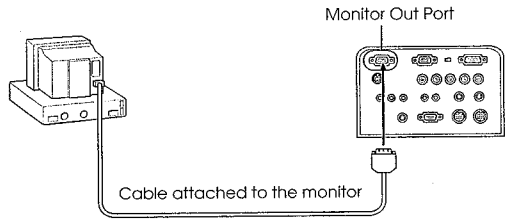

Use audio connection cables available on the open market (pin plug <--> 3.5mm stereo mini-jack plug).

**Point**

- The sound is output externally when the stereo mini-jack is inserted into the Audio Out port. Sound will not be output from the projector's speakers when this connection is made.
- The sound on the images being projected will be output.
- Purchase an audio connection cable that matches up with the connector on the external audio equipment to be used.

## Connecting external monitors

It is possible to display the image projected with the projector onto a computer simultaneously. Connect the projector's monitor out port to the computer monitor with the cable attached to the monitor.




**Point**

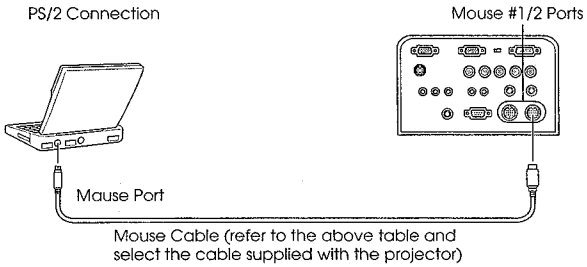
- There are cases where the MAC desktop adaptor and MAC monitor adapter available on the open market are required when connecting the projector to a Macintosh.
- Images cannot be displayed on external monitors when the computer is connected to the DVI-D port.



## Connecting the mouse (wireless mouse function)

This enables the computer's mouse pointer to be operated with the remote control in the same way as a wireless mouse.
Connect the computer's mouse port to the projectors Mouse #1/2 ports with the use of a mouse cable. Use the Mouse #1 port when the Computer #1 port has been connected, and the Mouse #2 port when the Computer #2 port has been connected.

| Computer | Mouse to use | Mouse cable to use |
|---|---|---|
| PC/AT DOS/V | PS/2 mouse | PS/2 mouse cable (supplied) |
| | USB mouse | USB mouse cable (supplied) |
| Macintosh | USB mouse | USB mouse cable (supplied) |

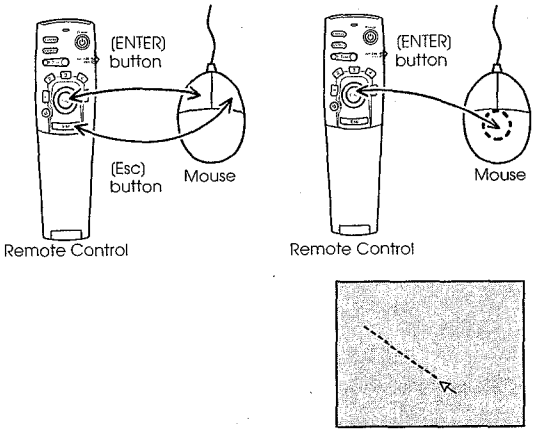

PS/2 Connection
Mouse #1/2 Ports
Mause Port
Mouse Cable (refer to the above table and select the cable supplied with the projector)

**Point**

- Only the USB standard mounted model supports USB Mouse Cable connections. In the case of Windows, only the Windows 98/2000 preinstalled model is supported. Operations cannot be guaranteed on upgraded Windows 98/2000 environments.
- Only a computer mouse connected to the mouse/com port can be used.
- There are cases where the computer must be set up to use a mouse. Refer to the instruction manual for the computer for further details..
- Switch off the power to the projector and computer before making the connection.
- It is necessary to reboot the computer if it does not work.
- Consult with your vendor if you wish to use a serial mouse, or an ADB mouse on a Macintosh.

Perform the following mouse operations after the connection has been established:

Left click ----------Presses the [Enter] button.
Right click ----------Presses the [Esc] button.
Mouse pointer movement-----Lowers the remote control [Enter] button.




**Point**

- The operations will be reversed if the left/right button functions of the mouse pointer have been amended with the computer.
- The mouse cannot be used when the menu is displayed, when the Effect, Picture-in-Picture, or E-Zoom functions are in use, or when the video image is displayed at real size.
- The movement speed of the mouse pointer can be changed. (see page 69)

# ■ Connecting video equipment

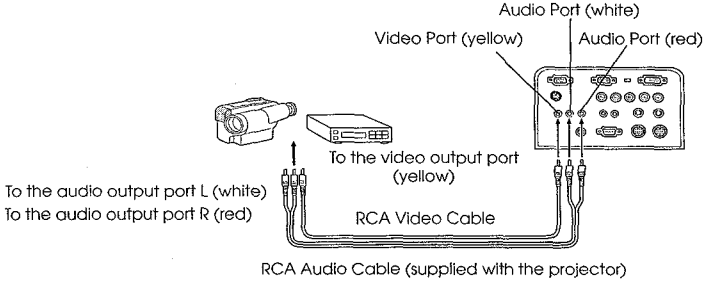
Switch off the power supply to the projector and video equipment prior to attempting to make the connection.

**Point**

The selected image's sound is output.

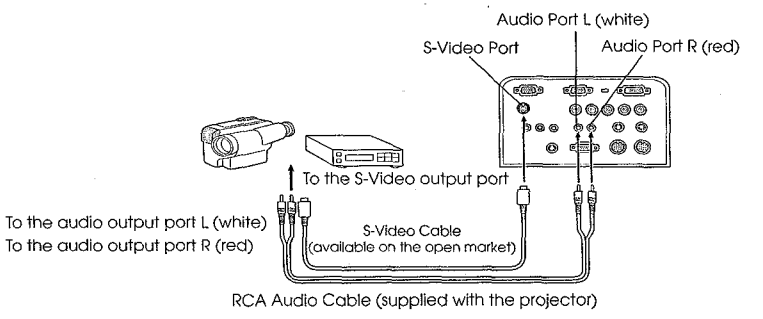
## In the case of composite image signals

- Connect the projector's Video Port to the video equipment with the supplied RCA Video Cable (Yellow).
- Connect the L-Audio-R (Video) ports with the RCA audio cable supplied (red/white) to output sound from the projector's speakers.


Audio Port (white)
Video Port (yellow)
Audio Port (red)
To the video output port (yellow)
To the audio output port L (white)
To the audio output port R (red)
RCA Video Cable
RCA Audio Cable (supplied with the projector)

## In the case of S image signals

- Connect the projector's S-Video Port to the video equipment with the S-Video cable (available on the open market).
- Connect the supplied RCA Audio Cable (Red/White) to the L-Audio-R (S-Video/BNC) Port if the sound is to be output from the projector's speakers.

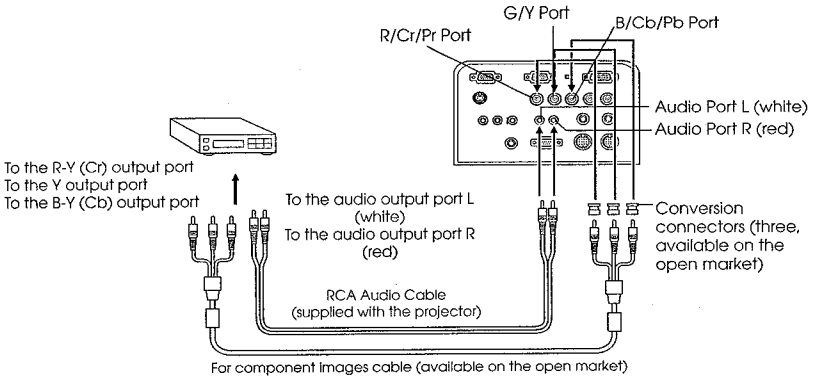

Audio Port L (white)
S-Video Port
Audio Port R (red)
To the S-Video output port
To the audio output port L (white)
To the audio output port R (red)
S-Video Cable (available on the open market)
RCA Audio Cable (supplied with the projector)

## In the case of component (color differential*) image signals

- Connect the projector's Computer 2/Component Video Port to the video equipment with the component image cable (available on the open market) so that the following table is supported.

| Video equipment | R-Y(Cr) | Y | B-Y(Cb) |
|---|---|---|---|
| Projector | R/Cr/Pr | G/Y | B/Cb/Pb |

- Connect the L-Audio-R (S-Video/BNC) ports with the RCA audio cable supplied (red/white) to output sound from the projector's speakers.


G/Y Port
R/Cr/Pr Port
B/Cb/Pb Port
Audio Port L (white)
Audio Port R (red)
To the R-Y (Cr) output port
To the Y output port
To the B-Y (Cb) output port
To the audio output port L (white)
To the audio output port R (red)
Conversion connectors (three, available on the open market)
RCA Audio Cable (supplied with the projector)
For component images cable (available on the open market)

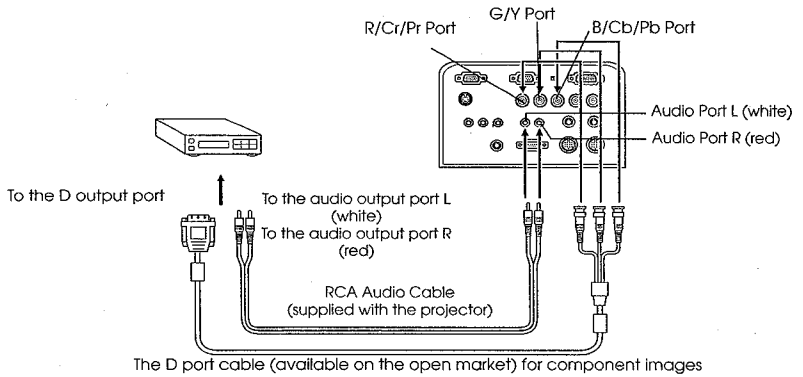
**Point**

- A conversion connector (available on the open market) is required on the projector's BNC port when a component image cable is connected. Align the video with the equipment port.
- Set the BNC parameter on the menu to [YCbCr] or [YPbPr], as appropriate for the input signal being used, when the connection has been established. (see page69 )



## In the case of the digital tuner's D output port

- Connect the digital tuner to the projector's Computer # 2/Component Video port with a D-port cable (available on the open market).
- Connect the supplied audio cable to the Audio port if the sound is to be output from the projector's speakers.

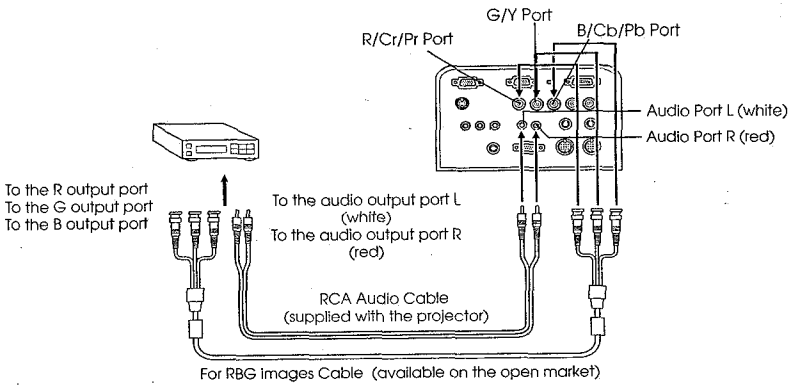

G/Y Port
R/Cr/Pr Port
B/Cb/Pb Port
Audio Port L (white)
Audio Port R (red)
To the D output port
To the audio output port L (white)
To the audio output port R (red)
RCA Audio Cable (supplied with the projector)
The D port cable (available on the open market) for component images

**Point**

- Set the BNC parameter on the menu to [YCbCr] or [YPbPr], as appropriate for the input signal being used, when the connection has been established. (see page69 )
- Establishing connections with digital tuners is only possible in Japan.
- Supports digital tuners up to the D4 rating.

## In the case of RGB image signals

- Connect the projector's Computer2/Component Video port to the video equipment with the component image cable (available on the open market).
- Connect the supplied RCA Audio Cable (Red/White) to the L-Audio-R (S-Video/BNC) Port if the sound is to be output from the projector's speakers.


G/Y Port
R/Cr/Pr Port
B/Cb/Pb Port
Audio Port L (white)
Audio Port R (red)
To the R output port
To the G output port
To the B output port
To the audio output port L (white)
To the audio output port R (red)
RCA Audio Cable (supplied with the projector)
For RBG images Cable (available on the open market)

**Point**

- Purchase the RGB image cable to match the connectors on your equipment.
- Set the BNC parameter on the menu to [RGB] when the connection has been established. (see page69 )



# Projecting

**This section provides explanations on starting and ending projection, and on the basic functions for adjusting projected images.**

## ■ Projection

Images can be projected after all connections have been completed.

### Preparations

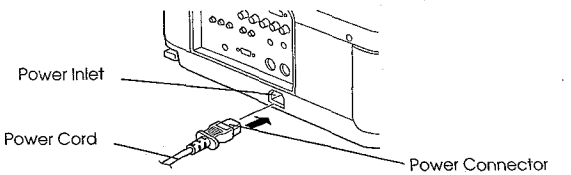
**⚠ Warning**

- Never look directly into the lens once the power supply has been switched on. Failure to observe this may result in the powerful light damaging eyesight.
- Ensure that the Power Cord supplied is used. The use of cables other than the one supplied may result in the outbreak of fire or electric shocks.

**⚠ Caution**

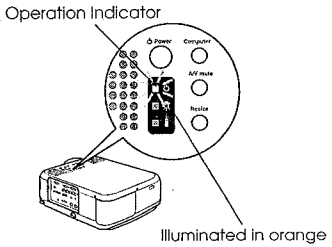
Do not perform any projection tasks with the Lens Cover attached. Failure to observe this may result in the cover becoming malformed due to heat.

1. **Connect the projector to a computer and video equipment.** (see page 27, 37)
2. **Remove the Lens Cover.**
3. **Attach the supplied Power Cord to the projector.**
   Check to confirm the shape of the projector's Power Inlet and Power Connector, align the connector in the correct direction, and then insert it as far as it will go.



**4** **Plug the Power Plug into the power socket.**

The Operation Indicator will be illuminated in orange.
If the power cable was disconnected before the projector had cooled down the last time operations were ended, the operation indicator will blink and then be steadily illuminated.



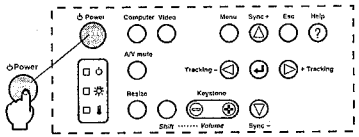

**Point**

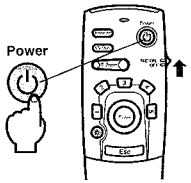
Button operations are not possible when the Operation Indicator is blinking in orange.

## Commencing projection

**1** **Press the [Power] button to turn on the power supply.**

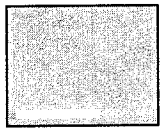
The Operation Indicator will begin to blink in green, and projection will be started.



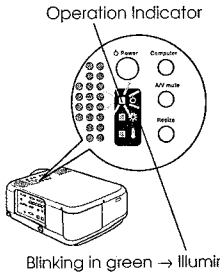



Set the R/C ON OFF switch to (ON) first of all when using the remote control unit

The Operation Indicator will change from blinking to being steadily illuminated in green after a while.



A message stating (No image signals input) will be displayed when no image signals have been input. (Depending on the no-signal setting, this message may not be displayed.) (see page 69)





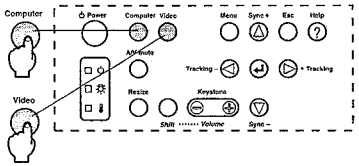


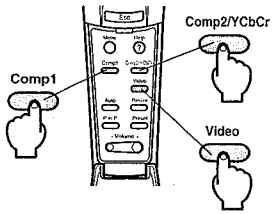

**Point**

Button operations are not possible when the Operation Indicator is blinking in green.

**2** **Select the Port to which the connection has been made when more than one item of equipment has been connected.**

Press the port button connected to the computer or video equipment to switch the input source.




| Connected Port | Button to Select | | Display at the top right-hand corner of the screen |
|---|---|---|---|
| | Main Unit | Remote Control | |
| Computer #1 Port | [Computer] (will change whenever pressed) | [Comp1] | Computer1 |
| BNC Port (RGB) | | | BNC(RGB) |
| BNC Port (YCbCr) | [Video] (will change whenever pressed) | [Comp2/ YCbCr] | BNC(YCbCr) |
| BNC Port (YPbPr) | | | BNC (YPbPr) |
| Video Port | | [Video] (will change whenever pressed) | Video |
| S-Video Port | | | S-Video |

**Point**

- Projection will take place without pressing the button if only one item of equipment is connected.
- Even if there is a physical connection, the input source will automatically switch to the state used immediately before power-off if there is no input signal, or if the connected equipment is not outputting a signal.
- The BNC port source switched with the main unit's [Computer] or [Comp2/YCbCr] will only display one of BNC (RGB), BNC (YCbCr) or BNC (YPbPr) depending on the BNC setting. (see page69 )

**3** **Starting projection.**

Switch on the power supply to the computer or video equipment. If the equipment connected is video equipment, then also press the [Playback] or [Play] buttons.
The [No Signal] display will be erased, and projection will commence.

**Point**

- If [No Signal] remains displayed, check the connections once again.
- Depending on the computer, there are cases when it is necessary to switch the image signal output destination with the key (Fn, etc.) or the settings after establishing the connection. If liquid crystal display devices with a different aspect ratio to normal are used (horizontal wide-screen types, for example,) it may be necessary to switch the computer's output image signals (screen resolution).

| NEC | Panasonic | Toshiba | IBM | SONY | FUJITSU | Macintosh |
|---|---|---|---|---|---|---|
| Fn+F3 | Fn+F3 | Fn+F5 | Fn+F7 | Fn+F7 | Fn+F10 | After rebooting, select the control panel monitor & sound to be set to mirroring. |

The table shown above provides examples for certain products. Refer to the computer's instruction manual for further details.

- Press the [Resize] button when signals that support DVD players or wide television screens (16:9 images) have been input. The parameters will change between 4:3 images and 16:9 images whenever the switch is pressed.
- Do not allow a single still picture to be projected for long periods of time, or project extremely bright images. Failure to observe this may result in the image being burnt onto the projected image.



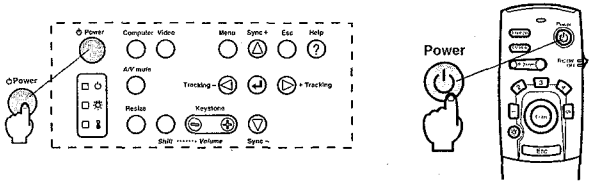
# ■ Ending

End through the following procedure.

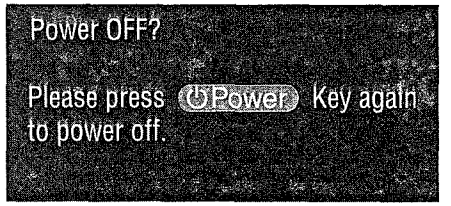
**1** **Turn off the connected equipment.**

**2** **Press the [Power] button.**

A message to confirm that the power needs to be switched off will be displayed.

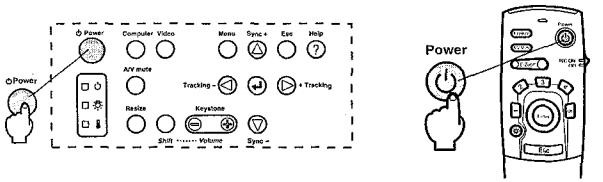



(Power OFF) confirmation message




**3** **Press the [Power] button once more.**

The lamp will be extinguished, the Operation Indicator will blink in orange, and the cool-down process will commence.

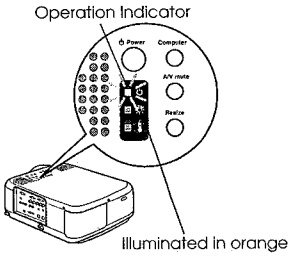



The Operation Indicator will change from blinking to being illuminated in orange once the cool-down process has been completed. The amount of time required for the cool down is approximately 60 seconds (may be longer depending on the ambient temperature).

**Point**

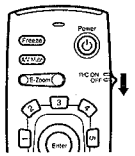
- Press a different button if the power is not to be switched off. The message will be erased after seven seconds if no buttons are pressed (the power will remain on).
- It is also possible to end projection by pressing the [Power] button as explained in procedure #2 for more than one second (will assume the same status as if ending with procedure #3).
- Button operations are not possible when the Operation Indicator is blinking in orange. In this event, please wait until full illumination has been attained.

**4** **After cooling (check that the operation indicator is illuminated in orange), unplug the Power Plug from the socket.**




> **⚠ Caution**
>
> Do not remove the Power Plug from the socket when the Operation Indicator is blinking in orange. Failure to observe this may result in damage to the equipment and will speed up the period for replacing the lamp.

**5** **Set the R/C ON OFF switch to [OFF] when using the remote control.**

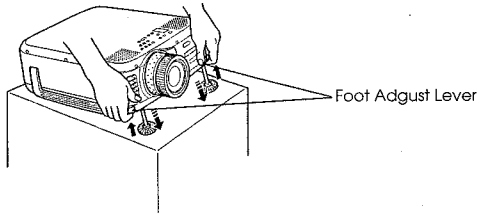


**Point**

The batteries are being consumed when the [R/C ON OFF] switch on the remote control unit is set at [ON]. Ensure that the [R/C ON OFF] switch on the remote control unit is set to [OFF] when not in use.

**6** **Restore the Front Foot if it has been extended.**

Steady the projector by hand, and then lift the Foot Adjust Lever with a finger and gently lower it into the main Unit.




**7** **Attach the lens cover.**





# ■ Adjusting the projection position

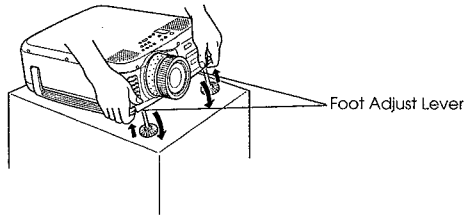
The projector can be adjusted into the following vertical projection positions.

## Feet adjustments

Adjust the projection angle of the projector.

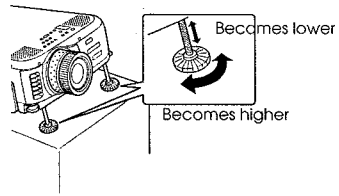
**1** **Lift the Foot Adjust Lever with a finger and raise the front part of the projector.**

The Front Foot will protrude.




**2** **Remove your finger from the Foot Adjust Lever, and then let go of the projector.**

**3** **Rotate the lower part of the Front Foot to minutely adjust the height.**




**Point**

- There are cases where the screen will be distorted into a trapezoid shape when foot adjustments are performed. Adjust the trapezoid distortion with the keystone correction function. (see page49 )
- The Front Foot is restored by lifting the Foot Adjust Lever with a finger and lowering the projector.

# ■ Adjusting the projection size

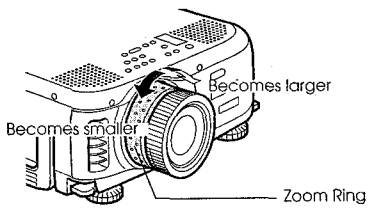
It is possible to adjust the size of the projection and correct any trapezoid distortion.

**Point**

A function to resize the screen (see page 56) and an E-Zoom function for enlarging certain areas (see page57 ) are also available.

## Zoom adjustment

**1 Rotate the Zoom Ring to make the required adjustments (enlargment up to a maximum of 1.3x is possible).**

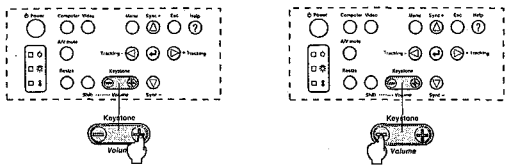


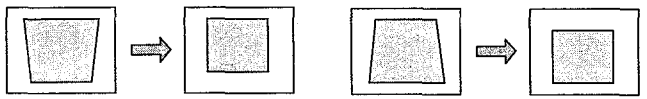

The projection distance must also be adjusted when enlarging the screen. (see page 25)

## Keystone adjustment

Make the necessary adjustment when the screen has been distorted into a trapezoid with foot adjustment.

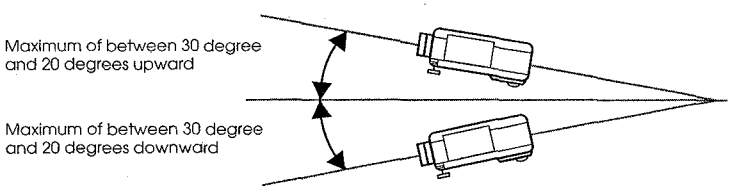
**1 Press the [Keystone +, -] button to lengthen the screen sidewards.**



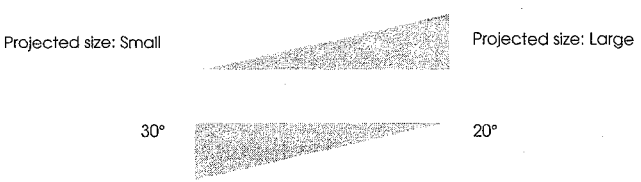



The corrected screen will shrink in size. The corrected screen will shrink in size.

It is possible to use the trapezoid correction function (through 64 stages) as long as the tilt angle of the projector is within a maximum vertical range of between 30 degrees to 20 degrees.




The maximum value for the tilt angle differs as shown below in accordance with the size of the projected image adjusted with zoom.




**Point**

- The screen will be reduced in size when keystone correction has been performed.
- The status of the keystone correction will be recorded. Perform readjustments that match the installation position when the projector position or angle have been changed.
- Reduce the sharpness if blurring occurs after keystone correction. (see page67 )
- Keystone correction is performed from the menu. (see page69 )

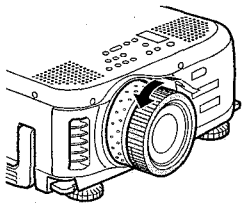
# ■ Picture Quality Adjustment

Adjusts image focus and disturbance.

## Focus adjustment

Aligns the focus of the image.

**1** **Rotate the Focus Ring to make the required adjustment.**



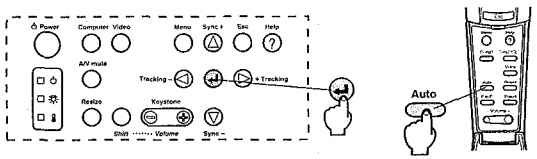
**Point**

- It is not possible to align the focus if the lens is dirty or fogged over with condensation. In this event, clean the lens accordingly. (see page85 )
- Correct adjustment is not possible if the installation position is out of line by between 1.1 to 14.5 meters. (see page 25)

## Auto adjustment (when projecting computer images)

Automatically adjusts the computer image to attain the optimum effect. The items adjusted include the Tracking, Position and Sync.

**1** **Press the [↵Enter] button on the projector (the [Auto] button on the remote control ).**




**Point**

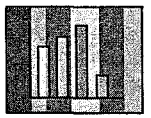
- If auto adjustments are initiated when the E-Zoom, A/V Mute or Picture-in-Picture functions are executing, adjustment will not be carried out until the executing function has been cancelled.
- Depending on the type of signals being output by the computer, there are cases when adjustment cannot be carried out correctly. In this event, adjust the Tracking and Sync. (see page51 )

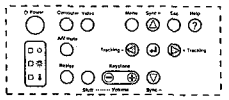


## Tracking adjustments (when projecting computer images)

Adjusted when vertical stripes are apparent on the computer image.

**1** **Press the [Tracking +, -] button on the projector.**

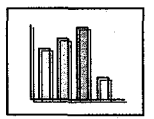


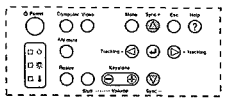


## Synchronization adjustments (when projecting computer images)

Adjusted when flashing, blurring and vertical noise are apparent on the computer image.

**1** **Press the [Sync +, -] button on the projector.**



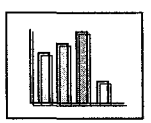


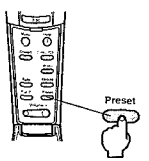
## Calling out adjustment values (when projecting computer images)

It is possible to record preset adjustment values and call them out when required.

**1** **Press the [Preset] button on the remote control.**

The pre-registered numbers between preset #1 and preset #5 will change in sequence whenever this button is pressed.






**Point**

- There are cases when these adjustments must be made again if the values output from the computer (resolution, display color) are amended after flashing and blurring have been adjusted.
- There are cases where flashing and blurring is caused by adjusting the brightness and contrast*.
- Images will be projected more vividly if synchronization adjustments are made after the tracking adjustments.
- Auto adjustments, tracking adjustments and synchronization adjustments are not possible if no image signals are being input by the computer, such as when projecting video images.
- The preset values must be registered beforehand. (see p a g e67)

# ■ Introduction of Functions

The functions that can be operated by pressing buttons when images are being projected are listed below.

| Function | Outline | Button | | Reference Page |
|---|---|---|---|---|
| | | Main Unit | Remote Control Unit | |
| Help | Displays the method of solving problems when trouble occurs. | Help | Help | 53 |
| A/V Mute | Temporarily mutes the image and sound. | A/V mute | A/V Mute | 55 |
| Freeze | Freezes the image. | - | Freeze | 55 |
| Resize | Changes the size of the image. | Resize | Resize | 56 |
| E-Zoom | Enlarges the image. | - | E-Zoom | 57 |
| Effect | Adds decorations to the image. | - | [1]-[5](Effect) | 58 |
| P in P | Adds a sub-screen to the image. | - | P in P | 61 |
| Preset | Calls out pre-registered adjustment values. | - | Preset | 51 |
| keystone correction | Adjusts trapezoid distortion. | Keystone | - | 49 |
| Auto adjustment | Automatically adjusts the image for optimum effect. | ↵(Enter) | Auto | 50 |
| Tracking | Adjusts vertical stripes that appear on the image. | Tracking | - | 51 |
| Synchronization | Adjusts flashing, blurring and vertical noise that appears on the image. | Sync | - | 51 |
| Volume | Adjusts the volume. | Shift + Volume | Volume | 62 |
| Menu | Displays the menu. | Menu | Menu | 65 |



# Useful Functions

**This section provides explanations on the effective and useful functions, such as presentations, *available with this projector.***

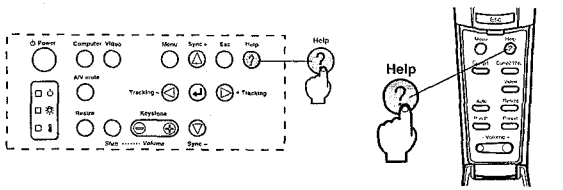
## ■ Useful Functions

### Help Function

The methods of solving trouble when it occurs are devided into separate sections and explained below for use when problems arise.

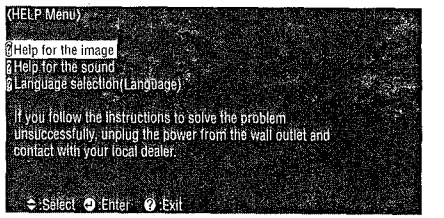
**1** **Press the [Help] button.**

The help menu will be displayed.



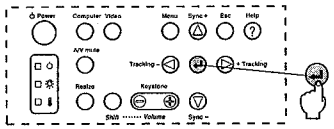

**2** **Select the item.**

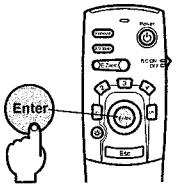
Press the [Sync+, -] button on the main unit (move the [Enter] button up and down on the remote control) to select the item.


(HELP Menu)
1 Help for the image
2 Help for the sound
3 Language selection(Language)
If you follow the instructions to solve the problem unsuccessfully, unplug the power from the wall outlet and contact with your local dealer.
:Select :Enter :Exit

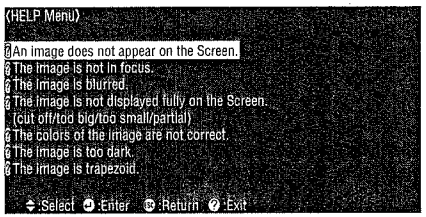
**3** **Set the item.**

Set the item by pressing the [Enter] button on the main unit (the [Enter] button on the remote control unit).






**4** **Repeat the operations explained in procedures 2 and 3 to select and set the detailed items.**


(HELP Menu)
An image does not appear on the Screen.
The image is not in focus.
The image is blurred.
The image is not displayed fully on the Screen.
(cut off/too big/too small/partial)
The colors of the image are not correct.
The image is too dark.
The image is trapezoid.
:Select :Enter :Return :Exit

**Point**

- Refer to [Troubleshooting] in this manual if the help text does not solve your problems. (see page74 )
- The help menu can be canceled by pressing the [Help] button.





# ■ Projection Cutting

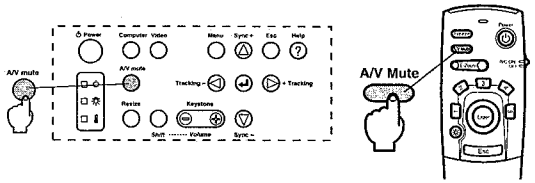
It is possible to temporarily erase and halt images and sound.

## A/V Mute Function

Temporarily erases images and sound.

**1** **Press the [A/V Mute] button.**

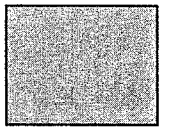
The images and sound will be erased.



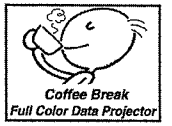

Projection will restart when the [A/V Mute] button is pressed again, when the volume is adjusted, or when the menu is displayed.
Depending on the setting, three different types of statuses may be selected when temporarily erasing images and sound. (see page 69)

Black color (Default setting)

Blue color



User logo




**Point**

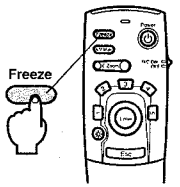
The [Coffee Break] image has been registered in the user logo. If the user logo is to be amended, it is necessary to register and set up a new user logo. (see page70 )

## Freeze Function

Temporarily freezes the image; however, the sound is not muted.

**1** **Press the [Freeze] button.**

The image will freeze.



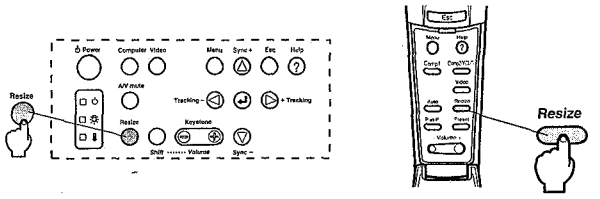

Press the [Freeze] button once more to cancel this mode.

# ■ Switching Image Sizes

The window display and resizing display are switched when projecting images onto a computer. Video image projections are switched between an aspect ratio of 4:3 and 16:9.

***1*** **Press the [Resize] button.**

The screen size will switch.







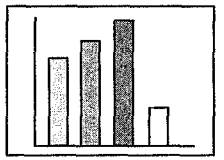
● **In the case of computer images**

Windows display: Projected at the entered resolution (real size display). There are cases where the projection size and the image size are different.

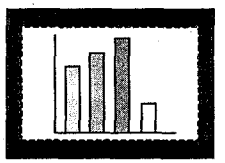
Resizing display: Projected with the resolution reduced or expanded so that the image fits the entire size of the projection.

**Example: When the input resolution is smaller than the display resolution (in the case of 800 x 600).**

Resizing display

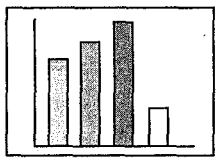


Window display

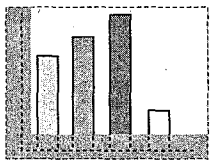


**Example: When the input resolution is greater than the display resolution (in the case of 1600 x 1200).**

Resizing display



Window display



**Point**

- The size will not be switched if the display resolution of the liquid crystal is the same as the entered resolution (1024 x 768 dots).
- A certain portion of the image will not be displayed if the entered resolution is larger than the display resolution of the liquid crystal. Lower the [Enter] button on the remote control unit to scroll through the areas not displayed.
- Certain areas on the left and right will not be displayed when SXGA (1280 x 1024 dots) is being displayed. Press the [Resize] button while pressing the [Shift] key on the main unit to cycle between left size, right side, full-screen enlargement and centered.

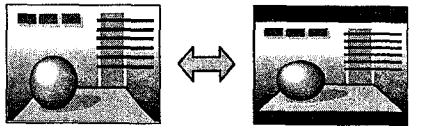


● **In the case of video images**

Switching will be performed for 4:3 and 16:9 image sizes. Images recorded with digital videos and DVD images can be projected on 16:9 wide screens.

4:3 display

16:9 display

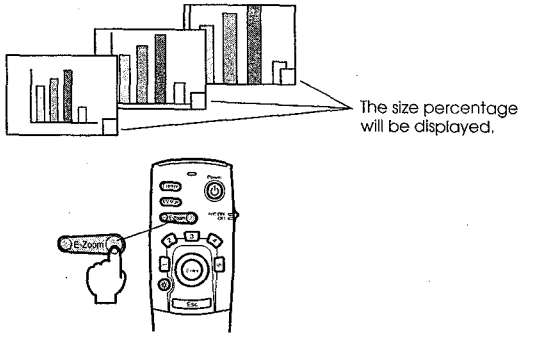


# ■ Enlarging Images (E-Zoom function)

It is possible to enlarge selected portions of projected sizes without amendment.

***1*** **Press the [E-Zoom] button.**

The size percentage will be displayed in the bottom right-hand corner to enable the image to be reduced or enlarged.




**Point**

- Enlargement is possible with 24 stages between 1x and 4x at increments of 0.125x.
- A certain portion of the image will not be displayed when it has been enlarged. Lower the [Enter] button on the remote control to scroll the screen and display this portion accordingly.
- Sub-screens will be enlarged when the Picture-in-Picture function is being used.

# ■ Effect Function

The [Effect] buttons add decorations to images displayed during presentations. The decoration settings can be amended on the effect menu. (see page 68)

## Cursor/Stamp

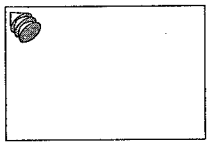
Imprints a stamp on the image.

**1 Press the [1] button on the remote control unit.**

The selection will switch between three different cursor/stamps whenever the [1] button is pressed.

**2 Lower the [Enter] button on the remote control unit to move the position of the cursor/stamp.**

**3 The stamp will be imprinted at the location of the cursor when the [Enter] button on the remote control unit has been pressed.**



**Point**

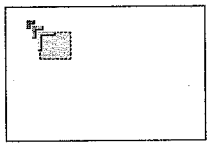
- The efect function will be canceled and the cursor will disappear when the [Esc] button is pressed.
- The decoration will be erased when the [5] button is pressed.
- The mouse cannot be used when the effect function is in progress.

## Box

Draws a Box on the image.

**1 Press the [2] button on the remote control unit.**

**2 Lower the [Enter] button on the remote control unit to move the cursor to the starting position.**

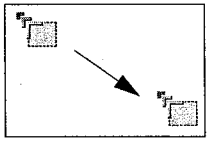


**3 Press the [Enter] button to set the start position.**





**4 Lower the [Enter] button on the remote control unit to move the cursor to the ending position.**



**5 Press the [Enter] button to set the end position.**

**Point**

- The decoration will be erased when the [5] button is pressed.
- There are cases where the effect will be difficult to see depending on the color combination of the image's background and box. Amend the color of the box in this event. (see page 68)
- The mouse cannot be used when the effect function is in progress.

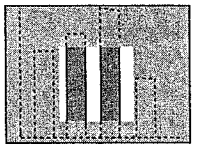
## Spotlight

Shines a spotlight on a certain part of the image.

**1 Press the [3] button on the remote control unit.**

Will switch between three different spotlight sizes whenever the [3] button is pressed.

**2 Lower the [Enter] button to move the spotlight.**



**Point**

- The efect function will be canceled and the spotlight will disappear when the [Esc] button is pressed.
- The mouse cannot be used when the effect function is in progress.

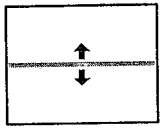
## Bar

Draws a bar line on the image.

**1** **Press the [4] button on the remote control unit to display the required cursor/stamp.**

The selection will switch between three different bars whenever the [4] button is pressed.

**2** **Press the [Enter] button to set the end position.**



**Point**

- The effect function will be canceled and the bar will disappear when the [Esc] button is pressed.
- There are cases where the effect will be difficult to see depending on the color combination of the image's background and the bar. Amend the color of the bar in this event. (see page 69)
- The mouse cannot be used when the effect function is in progress.

## Canceling effects

**1** **Press the [5] button on the remote control unit.**

The box, bars and other effects will disappear.



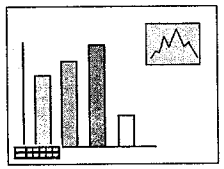


# ■ P in P Function

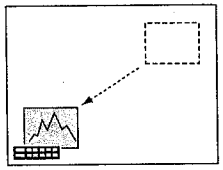
The video image (YCbCr or YPbPr) will be displayed as a sub-screen inside the computer image or component video image.

**1** **Press the [P in P] button.**

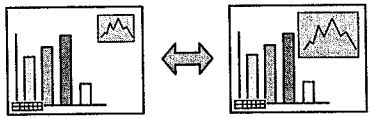
Operation instructions will be displayed at the bottom left-hand side, and the sub-screen will be situated at the top right-hand side of the main screen.



**2** **Press the [Enter] button on the remote control to move the position of the sub-screen.**



**3** **Press the [E-Zoom] button to change the size of the sub-screen.**



**4** **Press the [1] button on the remote control unit to switch to sub-screen sound.**

Press the [2] button on the remote control unit to return to the main-screen sound after the sound has been switched.

**Point**

The sub-screen ratio will be the same as the aspect ratio of the main screen when the sub-screen is displayed on component video images.

**5** **Press the [Enter] button to set the sub-screen display.**

The operation guide in the bottom left-hand corner will be erased.

**Point**

- The sub-screen will be erased when the [PinP] button is pressed again.
- The computer image or video image (component signal only) will be displayed in the main screen and the video image (Video, S-Video) will be displayed in the sub-screen, and the video image on the sub-screen can be amended with the PinP settings. (see page69)
- Switch the position, size, and sound of the sub-screen prior to fixing the sub-screen's display.
- The sub-screen can be switched between five different sizes.
- If the position of the sub-screen is changed, the next time PinP is used the sub-screen will be displayed at the sub-screen position set previously.
- When the main screen image is component video and the sub-screen image is S-Video, the sound input port is shared, making it impossible to select sound input.

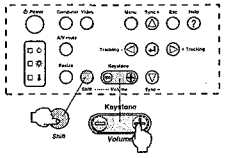
# Adjustments and Settings

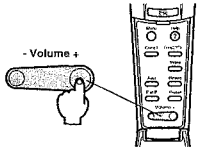
**This section provides explanations on adjusting the projector volume and on setup menu operations.**

## ■ Volume Adjustment

The volume can be amended when sound is emitted from the projector speakers.

***1*** **Press the [Volume+, -] button while pressing the [Shift] button([Volume+, -]button on the remote control).**




**Point**

Adjustment is possible when sound signals are being output to external speakers, however.



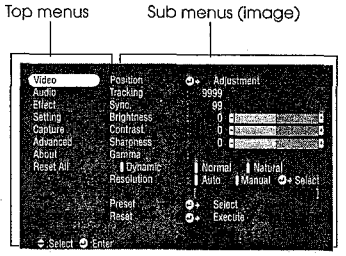


## ■ Menu Configuration

The menu enables the various adjustments and settings to be made.

### Menu items

The menus are split into top menus and sub menus and consist of a hierarchy structure. Also, the image menu will differ in accordance with the input source (connected port).




### ● Menu items

Image menu · Computer (D-Sub 15/BNC-RGB)

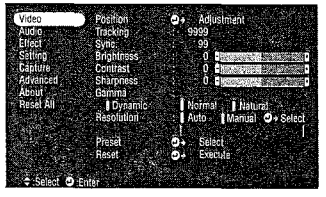



Image menu - Computer (DVI-D)

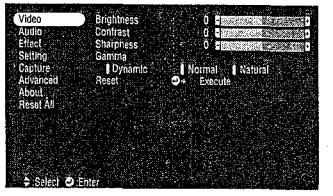



Image menu · Video (Video/S-Video)

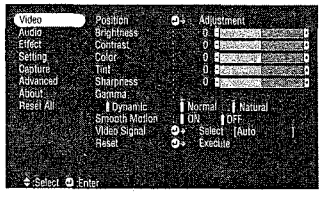
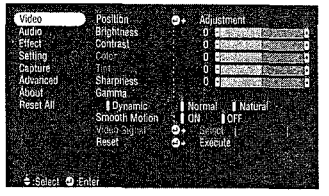


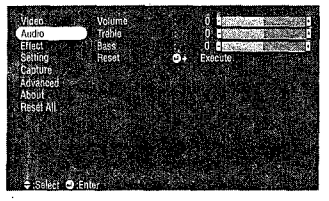

Image menu · Video (BNC-YCbCr/YPbPr)



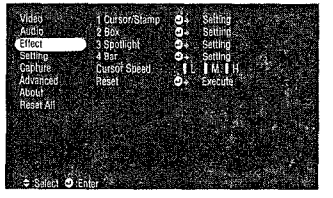

**Point**

- The items displayed on the image menu will differ in accordance with the projected input source, and most menus other than that belonging to the projected input source cannot be adjusted.
- Most image menu items cannot be adjusted when no image signals are being input.

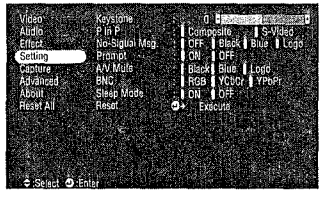
Sound menu



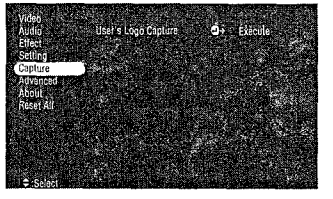

Effect menu



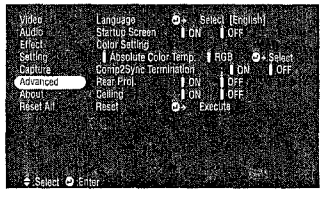

Setup menu



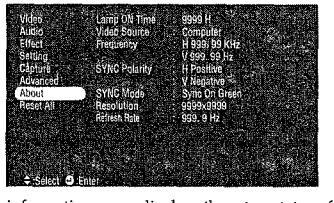

Capture menu




Advance settings menu

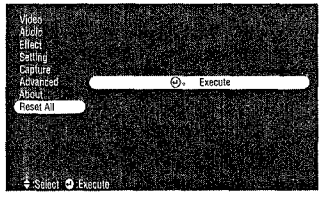



Information menu




The information menu displays the setup status of the projected input source

All reset menu




**Point**

The lamp illumination time is displayed as 0H between 0 and 10 hours, and in units of 1 hour above 10 hours.



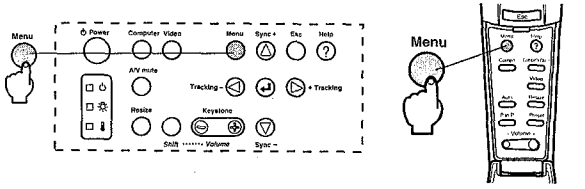
# ■ Menu Operations

The menus can be operated from both the projector and the remote control unit.

## Operation method

**1 Press the [Menu] button.**

The top menu will be displayed.




**2 Select the required item.**

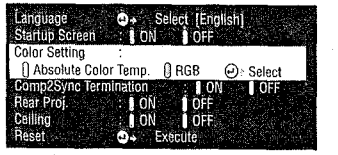
Press the [Sync +, -] button on the projector (lower the [Enter] button up or down on the remote control unit) to select the required item.

**3 Set the selected item.**

Press the [↵(Enter)] button on the projector (the [Enter] button on the remote control unit) to set the selected item. The sub-menu will be selected.

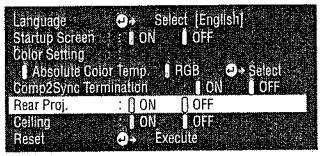
**4 Then select the detailed sub item.**

Press the [Sync +, -] button on the projector (lower the [Enter] button up or down on the remote control unit) to select the sub item.
The items displayed on the image menu and information menu will differ in accordance with the projected input source.



**5** **Select the parameter value.**

Press the [Tracking +, -] button on the projector (lower the [Enter] button left or right on the remote control unit) to select the parameter value.




**Point**

- ↵(Enter) is attached to the rear of the sub item names that execute the parameters and continue onto the lower hierarchies. Press the [Enter] button to set this selection, and then select the parameter setting again.
- Refer to the list of settings for further information on the function of each setting. (see page 67)

**6** **Set all of the other items in the same way.**

**7** **Press the [Menu] button.**

The menu will end.

**Point**

- Press the [Esc] button to return to the previous menu in the hierarchy.
- The items displayed on the image menu will differ in accordance with the projected input source, and menus other than that belonging to the projected input source cannot be adjusted.
- Image menus cannot be adjusted when no image signals are being input.



## Setting items

| Top Menu | Sub Menu | Function | Default Value |
|---|---|---|---|
| Video | Position | Moves the image's display position up, down, left and right. Press the [Enter] button to make the required adjustments on the position adjustment screen displayed. | Depends on the connection signals |
| | Tracking | Adjusts vertical stripes that appear on the Computer image. | Depends on the connection signals |
| | Sync. | Adjusts disturbance, blurring and vertical noise that appears on the Computer image.<br>· Disturbance and blurring may occur as a result of adjusting the brightness and contrast.<br>· It is possible to regulate the vividness of the image by adjusting the synchronization after adjusting the tracking. | 0 |
| | Brightness | Adjusts the brightness of the image. | Center value (0) |
| | Contrast | Adjusts the contrast of the image. | Center value (0) |
| | Color | Adjusts the color depth of the image. | Center value (0) |
| | Tint | Adjusts the tint of the image. | Center value (0) |
| | Sharpness | Adjusts the sharpness of the image. | Center value (0) |
| | Gamma | Corrects the color vividness of the image.<br>Dynamic: Produces an image with clear color differences. Suitable for displaying plans, etc.<br>Normal: Projects tint without correction.<br>Natural: Produces an image with natural tint. Suitable for video images. | Normal |
| | Resolution | Sets the input resolution.<br>Auto: Automatically adjusts the input resolution.<br>Manual: Press the [Enter] button and select the required setting from the input resolution selection menu displayed. | Auto |
| | Preset | It is possible to save the current computer input signal adjustment values (input resolution, tracking, synchronization signals, Brightness, Contrast, Sharpness, Gamma display position).<br>Press the [Enter] button and select the preset number under which registration is to be performed from the preset selection menu displayed.<br>· The adjustment values registered under a preset number represent the current status of the system. Ensure that the optimum values have been set up before registering this data.<br>· The preset adjustment values can be called out by pressing the [Preset] button. (see page 51) | Not registered |

| Top Menu | Sub Menu | Function | Default Value |
|---|---|---|---|
| Video | Video Signal | Sets the video signal method.<br>Press the [Enter] button and select the required setting from the video signal method selection menu displayed.<br>· The video signal method will be automatically set up in the [Auto] mode, but do not use the [Auto] mode for the PAL system (60Hz). | Auto |
| | Reset | Returns all image menu adjustment values to the default values.<br>Press the [Enter] button and then select [Yes] on the confirmation screen displayed.<br>· Select [Reset All] to return all image and sound values to the default settings. (see page 71) | - |
| Sound | Volume | Adjusts the volume. | 15 |
| | Treble | Adjusts the strength of the high tones. | Center value (0) |
| | Bass | Adjusts the strength of the low tones. | Center value (0) |
| | Reset | Returns all sound menu adjustment values to the default values.<br>Press the [Enter] button and then select [Yes] on the confirmation screen displayed.<br>· Select [Reset All] to return all image and sound values to the default settings. (see page 71) | - |
| Effect | Cursor/Stamp | Sets the shape, size, color and length of the cursor/stamps allocated to the [1] button on the remote control unit.<br>Press the [Enter] button and select the item to be displayed from the cursor/stamp setup menu. The shape, size, color and length conditions can be set by pressing button types 1 to 3. Depending on the selected cursor shape, size, color and length cannot be set up.<br>· The [1] button executes the cursor/stamp function. The cursor/stamp types will be switched between 1 and 3 sequentially for each time the [1] button is pressed. (see page 58) | Individual settings between types 1 to 3 |
| | Box | Sets the use/non-use and shape of the color and shading of the Box allocated to the [2] button on the remote control unit.<br>Press the [Enter] button and select the required item from the Box setup menu.<br>· The [2] button executes the Box function. (see page 58) | Color: Magenta<br>Shading: No<br>Shape: Square |
| | Spotlight | Sets the size of the spotlight allocated to the [3] button on the remote control unit.<br>Press the [Enter] button and select the required item from the spotlight setup menu.<br>· The [3] button executes the spotlight function. (see page 59) | Size: Medium |





| Top Menu | Sub Menu | Function | Default Value |
|---|---|---|---|
| Effect | Bar | Sets the color, direction and width of the bar allocated to the [4] button on the remote control unit.<br>Press the [Enter] button and select the required item from the bar setup menu. The color, direction and width can be selected independently for each of the settings between 1 and 3.<br>· The [4] button executes the bar function. The bar types will be switched between 1 and 3 sequentially for each time the [4] button is pressed. (see page 60) | Individual settings between types 1 to 3 |
| | Cursor Speed | Selects the speed of Cursor.<br>L: Slow M:Medium H:Fast | M |
| | Reset | Returns all effect menu adjustment values to the default values.<br>Press the [Enter] button and then select [Yes] on the confirmation screen displayed.<br>· Select [Reset All] to return all image and sound values to the default settings. (see page 71) | - |
| Setting | Keystone | Adjusts images which appear trapezoidal.<br>· The screen will be reduced in size when keystone correction has been performed.<br>· The status of the keystone correction will be recorded. Perform readjustments that match the installation position when the projector position or angle have been changed.<br>· Reduce the sharpness if blurring occurs after keystone correction. (see page 67) | Center value (0) |
| | P in P | Sets the input source for the P in P function's sub-screen.<br>· The P in P function is executed by pressing the [PinP] button on the remote control unit. (see page 61) | Composite |
| | No Signal Msg | The status for [No Image Signal Input] and other message display.<br>· The user logo must be registered and set up before it can be amended. | Blue |
| | Prompt | Sets whether to display the input source on the screen or not. | ON |
| | A/V Mute | Sets up the screen status for when the [A/V Mute] button is pressed.<br>· User logos must be registered and set up before they can be amended. | Black |
| | BNC | Sets the mode for the input image signals connected to the BNC port.<br>RGB: Set when the input is a RGB signal.<br>YCbCr: Set when the input is a component video signal (YCbCr).<br>YPbCr: Set when the input is a component video signal (YPbCr). | RGB |

| Top Menu | Sub Menu | Function | Default Value |
|---|---|---|---|
| Set-ting | Sleep Mode | Sets the energy-saving function for when no image signals are being input. When this is set at [ON], projection will be automatically ended and the projector will enter the sleep mode if no image signals are input and no operations are performed for a period of thirty minutes (the operation indicator will be illuminated in orange).<br>Press the [Power] button to restart projection. | ON |
| | Reset | Returns all setting menu adjustment values to the default values.<br>Press the [Enter] button and then select [Yes] on the confirmation screen displayed.<br>· Select [Reset All] to return all image and sound values to the default settings. (see page 71) | - |
| Cap-ture | User logo capture | Registers user logos. (see page 72)<br>Press the [Enter] button and follow the instructions displayed on the confirmation screen.<br>· The saving procedure requires a certain amount of time to complete. Do not attempt to operate the projector or the equipment connected to the projector while this procedure is running. Failure to observe this may result in damage.<br>· The size that can be registered is 400 x 300 dots.<br>· The display size will be adjusted when video images are being projected. | [Coffee Break] image |
| Adva nced | Language | Sets the language with which messages are to be displayed.<br>Press the [Enter] button and select the required language from the language selection menu displayed. | English |
| | Startup Screen | Displays the user logo during warm-up after the power has been switched on.<br>· The user logo must be registered and set up before it can be amended. | OFF |
| | Color Setting | Adjusts the color temperature of the image.<br>Absolute color temperature: Sets the color temperature.<br>RGB: Sets the strength of the RGB colors (red, green and blue.)<br>Press the [Enter] key to display the color setup menu, select the R, G and B items, and then set the required value.<br>· Set the color temperature value to the yardstick value. | Absolute color temperature 7500K |



| Top Menu | Sub Menu | Function | Default Value |
|---|---|---|---|
| Adva nced | Comp2 Sync Termination | Sets the Computer #2 termination mode to enable image processing from a Port.<br>On: Terminated in analog (75Ω)<br>OFF: TTL input<br>· Usually used at [OFF]. Set at on with the switcher when analog 75Ω termination is required. | OFF |
| | Rear Proj. | Set at [ON] to project images onto a half-transparent screen from the rear. The projected image will be inverted. | OFF |
| | Ceiling | Set this to [ON] if the projector is to be suspended upside down from the ceiling and images projected. The projected images will be inverted both vertically and horizontally.<br>· Use the special ceiling mount when the projector is to be suspended upside down from the ceiling. The special suspension brackets can be ordered from your dealer or nearest service office of our company. | OFF |
| | Reset | Returns all advanced setting menu adjustment values to the default values.<br>Press the [Enter] button and then select [Yes] on the confirmation screen displayed.<br>· Select [Reset All] to return all image and sound values to the default settings. | - |
| Infor-mat-ion | | (Displays the current settings) | - |
| Reset all | Execute | Returns all items in the set-up menus to the default values.<br>Press the [Enter] button and then select [Yes] on the confirmation screen displayed.<br>· Execute the [Reset] function from each individual sub menu to return the image and sound settings to the default values for each menu.<br>· The user logo, lamp time, language and BNC settings will not be returned to the default values. Perform the reset procedure after the lamp has been replaced. (see page 87) | - |

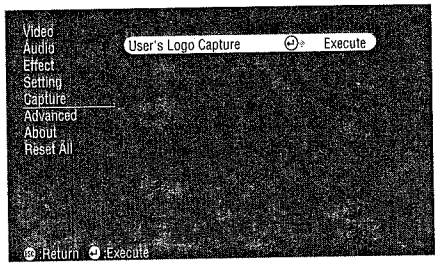
- The image menu and information displayed will differ in accordance with the projected input source, and Menus other than that belonging to the projected input source cannot be adjusted.
- The information menu displays the status of the input source settings being projected.

## User logo registration

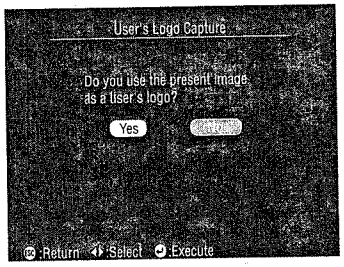
Registers the images currently displayed as the user logo.
The existing user logo will be deleted if a new user logo is registered.

**1** **Displays the image that is to be registered as the user logo.**

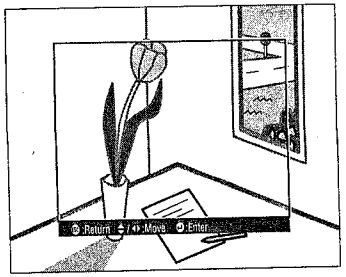
**2** **Press the [Menu] button and select [Capture] - [Use's Logo Capture].**
The confirmation screen will be displayed.




**3** **Select [Yes] and then press the [↵ (Enter)] button on the main unit (the [Enter] button on the remote control).**
The image to be registered will be displayed.



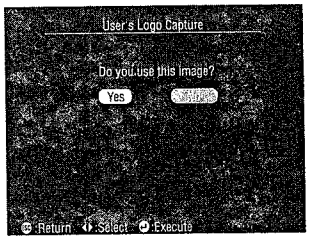

**4** **Adjust the position of the image with the [Sync +/-] and [Tracking +/-] buttons on the main unit ([Enter] button on the remote control), and then press the [↵Enter] button on the main unit (the [Enter] button on the remote control).**
The confirmation.screen will be displayed.



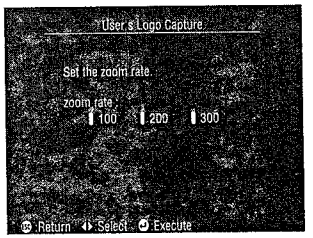




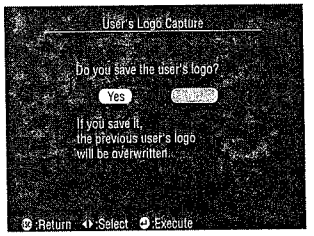

**5** **Select [Yes] and then press the [↵(Enter)] button on the main unit (the [Enter] button on the remote control).**
The enlargement setup screen will be displayed.




**6** **Select the enlargement rate and then press the [↵(Enter)] button on the main unit (the [Enter] button on the remote control).**
The screen to confirm saving will be displayed.




**7** **Select [Yes] and then press the [↵(Enter)] button on the main unit (the [Enter] button on the remote control).**
The image will be saved. Wait until the [saving completed] screen is displayed.




**Point**

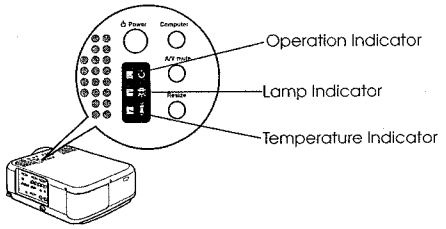
- A certain amount of time is required for the saving process. Do not operate the projector or connected equipment while saving is in progress. Failure to observe this may result in defects.
- The image size that can be registered is 400 x 300 dots.
- The display size will be amended depending on the input resolution.
- Do not allow a single still picture to be projected for long periods of time, or project extremely bright images. Failure to observe this may result in the image being burnt onto the projected image.

# Troubleshooting

**This section provides explanations on potential problems and the methods of taking care of them.**

## Troubleshooting

When you think you have a problem, first of all check the Indicators on the projector.
The projector is fitted with Operation Indicator, Lamp Indicator and Temperature Indicator to advise the projector's status.




### Operation Indicator

| Indicator Status | Cause | Recovery or Status | Reference Page |
|---|---|---|---|
| Illuminated in Orange | Stand-by status | (Not an error)<br>Projection will be started when the [Power] button is pressed. | 42 |
| Blinking in Orange | Cool-down procedure in progress | (Not an error)<br>· Wait for a moment. The acount of time for the projector to cool down (cooling the lamp) will depend on the external temperature, etc.<br>· The [Power] button cannot be used during the cool-down period. This will be illuminated in orange once the cool-down process has been completed, so press the button once more then. | 49 |
| Illuminated in Green | Projection in progress | (Not an error) | 42 |
| Blinking in Green | Warm-up in progress | (Not an error)<br>· Wait for a moment.<br>· The green lamp will stop blinking and become illuminated once the warm-up procedure has been completed. | 42 |
| Illuminated in Red | Internal error | Cease operations, remove the Power Plug from the socket and contact your dealer or nearest service office of our company and request repairs. | |
| Extinguished | The power is not switched on | The power is not switched on.<br>· Check the power cord connection.<br>· Check the power supply to the socket. | 42 |

### Lamp Indicator

| Indicator Status | Cause | Recovery and Status | Reference Page |
|---|---|---|---|
| Blinking in Red | Lamp error | · Replace with a new lamp (BHNEELPLP12-SA).<br>· If the lamp shatters, handle it with care to avoid injury and replace it with a spare lamp.<br>· Ensure that the lamp and lamp cover have been attached firmly after replacing the lamp. The equipment is fitted with a mechanism that prevents the lamp from being switched on if the lamp and lamp cover are not securely in place. | 87 |
| Blinking in Orange | Time to replace the lamp. | Replace with a new lamp (BHNEELPLP12-SA). | 87 |
| Extinguished | | (Not an error)<br>The power has not been switched on or normal projection is in progress. | |

## Temperature Indicator

| Indicator Status | Cause | Recovery and Status | Reference Page |
|---|---|---|---|
| Illuminated in Red | Excesive internal temperature (overheating) | · Use the projector within the permissible temperature range of between +5 °C and +40 °C.<br>· Install the projector in a well-ventilated place and ensure that the ventilation inlet and outlet are not blocked.<br>· Clean the Air Filter. | 23<br>85 |
| Blinking in Red | Internal error | Cease operations, remove the Power Plug from the socket and contact your dealer or nearest service office of our company and request repairs. | |
| Blinks in orange | High-temperature cooling in progress | · (This is not an error, but the projector will automatically cease operating if the temperature increases any further.)<br>· Use the projector within the permissible temperature range of between +5 °C and +40 °C.<br>· Install the projector in a well-ventilated place and ensure that the ventilation inlet and outlet are not blocked.<br>· Clean the Air Filter. | 23<br>85 |
| Extinguished | | (Not an error)<br>The power has not been switched on or normal projection is in progress. | |

**Point**

- Refer to the section on [When the Indicators Provide No Help] on the following page if the Indicators appear normal but the projected image is defective.
- Contact your dealer if an Indicator status not covered by the above table is apparent.
- Allowing dust and dirt to accumulate in the air filter will result in deteriorated airflow, which will increase the temperature inside the projector and lead to a shortened lamp life-span, the necessity to replace the optical parts, cooling fan and air filter, and subsequent damage.



# When the Indicators Provide No Help

Refer to each relevant item if the following situations arise but the indicators provide no help.


- The image is not projected page 77
- No sound page 82
- The image is unclear page 79
- The remote control will not work page 83
- The image is cut up (Large)/Small page 81
- Cannot end page 83
- The image color is bad page 81
- The image is dark page 82

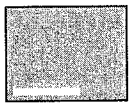

## The image is not projected

### ● Nothing is displayed

Nothing is displayed

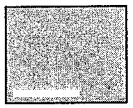
- **Is the Lens Cover still in place?**
  see page 41
- **Has the power been switched off and then on immediately?**
  The [Power] button will not operate after projection has been finished (during the cooling down procedure). The [Power] button will work again after the cooling down process Projection lamp cooling operations: the operation indicator is illuminated in orange has been completed.
  see page 49
- **Is the Sleep Mode set at ON?**
  When the sleep mode has been set at [ON], the lamp will be automatically extinguished if no operations occur and no signals are input for a period of thirty minutes.
  see page 70
- **Did you press the [Power] button?**
  see page 42
- **Has the brightness of the image been correctly adjusted?**
  see page 67
- **Is the system in the [A/V Mute] mode?**
  see page 55
- **Try the [Reset All] procedure.**
  see page 71
- **Is the input image completely black?**
  There are cases where input images will become completely black owing to screen savers, etc.
- **Are image signals being input?**
  No message will be displayed if the [Menu] - [Settings] - [No Signal Display] parameter is set at OFF. Set this to black or blue to display the message.
  Refer to the relevant items when the message is displayed.
  see page 78

## ● Messages



[Not Supported] will be displayed

- **Is the resolution of the image signal output from the computer higher than UXGA (1,600 x 1,200)?**
  see page 27
- **Check to ensure that the mode supports the frequency of the image signals output from the computer.**
  Refer to the computer's instruction manual to discover how to amend the resolution and frequency of the image signals output from the computer.
  see page 27

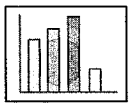


[No Signal] will be displayed

- **Have the cables been connected correctly?**
  see page 27, 37
- **Has the correct image input port been selected for the connection?**
  Press the [Computer] or [Video] buttons on the projector ([Comp1], [Comp2/YCbCr] [Video] on the remote control) to switch the image.
  see page 43
- **Has the power supply to the connected computer or video equipment been switched on?**
  see page 44
- **Are image signals being output from the connected computer or video equipment?**
- **It is necessary for the image signals to be output to the projector when note-type computers, liquid crystal laptop computers, and computers which use liquid crystal display units that have different aspect ratios to normal (horizontal wide-screen types, for example,) are being used.**
  Image signals are not output externally simply because they are output to the LCD screen under normal conditions, so the setting must be switched to external output.
  There are models for which image signals are not output to the LCD screen when output externally.
  see page 27

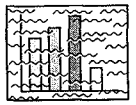


## The image is unclear



- The screen is blurred.
- Focus can only be attained in certain areas.

- **Has the focus been set correctly?**
  see page 50
- **Has the projection angle been increased by adjusting the feet?**
  There are cases where the vertical focus is difficult to align if the projection angle is too large.
- **Is the projection distance suitable?**
  The recommended projection distance range is between 1.1m and 14.5m. Locate the projector within this distance range.
  see page 25
- **Is the lens soiled?**
  see page 26
- **Is the projection light shining at right angles onto the screen?**
  see page 85
- **Is the lens fogged?**
  Condensation will form on the surface of the lens when the projector is suddenly brought into a warm room from a cold room, and this may lead to the image seeming blurred. In this event, switch the power off and leave the unit to stand for a while.
- **Has the [Sync., Tracking and Position] been adjusted?**
  The image can be adjusted by regulating the [Tracking] and [Sync] buttons on the projector while monitoring the image on screen. Adjustments can also be made by opening the [Menu].
  see page 51, 67
- **Has the signal format setting for the image been set correctly?**
  · In the case of computer images:
  Set the signal format with [Menu] – [Image] – [Resolution]. There are cases where the image signals being input cannot be determined in the [Auto] mode.
  see page 67
  · In the case of video images:
  Select the video signal format with [Menu] – [Advanced] – [Video Signal]. There are cases where the video image signals being input cannot be determined in the [Auto] mode.
  see page 68



- The image is disturbed.
- Noise appears

- **Has the cable been connected correctly?**
  see page 27, 37
- **Is the selected resolution correct?**
  Align the computer with the signals supported by the projector. Refer to the computer's instruction manual for details on how to amend the signals.
  see page 27
- **Has the [Sync., Tracking and Position] been adjusted?**
  The image can be adjusted by regulating the [Tracking] and [Sync] buttons on the projector while monitoring the image on screen. Adjustments can also be made by opening the [Menu].
  see page 51, 67
- **Has the cable length been extended?**
  There are cases where noise will occur if the cable length is extended.
- **Has the signal format setting for the image been set correctly?**
  · In the case of computer images:
  Set the signal format with [Menu] – [Image] – [Resolution]. There are cases where the image signals being input cannot be determined in the [Auto] mode.
  see page 67
  · In the case of video images:
  Select the video signal format with [Menu] – [Image] – [Video Signal Format]. There are cases where the video image signals being input cannot be determined in the [Auto] mode.
  see page 68
- **Are the settings under [Menu] [Settings] [BNC] correct for your system?**
  · For computer images:
  Set to [RGB].
  see page 31
  · For video images:
  For component video signals, set to either [YCbCr] or [YPbPr] depending on your input signal.
  see page 38, 39
  For RGB Video signals, set to [RGB].

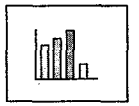




## The image is cut up (Large)/Small

- The image is cut up
- The image is small

- **There is a possibility that the [Resize] setting has not been correctly selected.**
  Press the [Resize] button.
  see page 56
- **Has the [Position] been adjusted?**
  Adjust with [Menu] – [Image] – [Position].
  see page 67

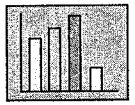


- **Is the selected resolution correct?**
  Align the computer with the signals supported by the projector. Refer to the computer's instruction manual for details on how to amend the signals.
  see page 27
- **Amend the resolution for note-type and liquid crystal type computers.**
  Either amend the resolution so that the display fills the entire screen, or set the image signals so that only external output is possible.
  see page 27

## The image color is bad

- **Has the image brightness been correctly adjusted?**
  see page 67
- **Have the cables been connected correctly?**
  see page 27, 37
- **Has the contrast been correctly adjusted?**
  see page 67
- **Has the color setting been correctly adjusted?**
  see page 70
- **Have the color density and tint been correctly adjusted?**
  (The display on the computer monitor or the liquid crystal screen will not always match up with the tint of the image, but this is not an abnormality.)
  see page 67
- **Is it time to replace the lamp?**
  If the Lamp Indicator is blinking, it means that the time to replace the lamp is drawing near. When the time to replace the lamp draws near, the image will appear dark and the tint will deteriorate. In this event, replace the lamp with a new one.
  see page 87
- **For component video signal input, are the settings under [Menu] [Settings] [BNC] correct for your system?**
  For component video signals, set to either [YCbCr] or [YPbPr] depending on your input signal.
  see page 38, 39

## The image is dark



- **Is it time to replace the lamp?**
  If the Lamp Indicator is blinking, it means that the time to replace the lamp is drawing near. When the time to replace the lamp draws near, the image will appear dark and the tint will deteriorate. In this event, replace the lamp with a new one.
  see page 87
- **Has the image brightness been correctly adjusted?**
  see page 67
- **Has the contrast been correctly adjusted?**
  see page 67

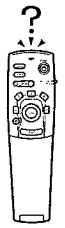
## No sound

- **Has the sound input been connected correctly?**
  see page 33, 37
- **Has the image for which sound is required been selected?**
  see page 43
- **Is sound being emitted from connected equipment?**
  Confirm the sound from connected equipment, etc.
  Has the volume been turned right down?
  see page 62
- **Has the [A/V Mute] function been left on?**
  There is a possibility that the [A/V Mute] mode is in effect.
  Press the [A/V Mute] button, adjust the volume, or display the menu to cancel the [A/V Mute] status.
  see page 55



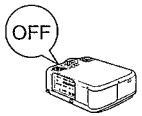


## The remote control will not work



- **Is the [R/C ON OFF] switch on the remote control on?**
  see page 42
- **Is the remote control being aimed in the correct direction?**
  The operable range of the remote control unit is 30° to the left and right, and 15° up and down.
  see page 21
- **Is the distance between the remote control and the projector too great?**
  The operable distance of the remote control unit is approximately 10m.
  see page 21
- **Is the light-receiving area on the remote control blocked?**
- **Has the remote control light-receiving area been subject to direct sunlight, flourescent light or any other strong light source?**
- **Have the batteries been mounted in place?**
  see page 21
- **Have the batteries run out?**
- **Have the batteries been mounted back to front?**
  see page 21

## Cannot end (after the [Power] button has been pressed)




- **Is the Operation Indicator illuminated in orange?**
  The projector has been designed so that the Operation Indicator is not extinguished even when the power has been switched off.
  The Operation Indicator will be extinguished when the Power Plug has been disconnected from the socket.
- **The fan will not cease operations.**
  The cool-down process (to allow the projector lamp to cool down; the operation indicator will blink in orange) will be performed after the power has been switch off by pressing the [Power] button. The operation indicator will be illuminated in orange when this has been completed, so remove the power plug from the socket at this point.
  *The amount of time required for the cool-down process will depend on the external temperature.

**Point**

If an abnormality remains after checking the results of the above inspections, disconnect the Power Plug from the socket and consult with your dealer.

# Maintenance

**This section provides explanations on taking care of the projector, replacing consumable items and other maintenance procedures.**

**Point**

There are cases where excessive use, and the environment and conditions in which the projector is used may lead to a shortened lamp life-span, the necessity to replace the optical parts, cooling fan and air filter, and subsequent damage.

## ■ Cleaning the Projector, Cleaning the Lens, Cleaning the Air Filter

Clean the projector if it becomes soiled and when the images are not projected clearly. The air filter and lamp's suction inlet should also be cleaned approximately once every 100 hours of use.

### ⚠ Warning

- The cabinet must never be opened by anyone other than a trained service technician. The projector contains many high-voltage parts that may result in electric shocks. Inspections, repairs, adjustments and cleaning are to be requested to your dealer or nearest service office of our company.
- Exercise caution when handling the Power Plug and Power Connector. Mishandling may result in the outbreak of fire and electric shocks. Observe the following when handling the Power Plug.
  - Do not connect plugs or connectors that have become dirty or have foreign matter adhering to them.
  - Ensure that the plugs and connectors are firmly inserted in the relevant sockets as far as they will go.
  - Never attempt to connect plugs and connectors with wet hands.

### ⚠ Caution

- Never attempt to remove the lamp immediately after use.
  Failure to observe this may result in burns or other injuries. Turn off the projector and allow the lamp to cool down for at least 60 minutes first.
- Disconnect the Power Plug and Power Connector from their sockets when carrying out maintenance tasks. Failure to observe this may result in electric shocks.

Switch off the power supply and disconnect the Power Cord prior to cleaning any part of the projector.





### Cleaning the projector

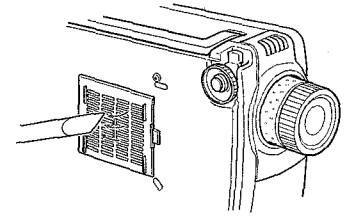
- Gently wipe the soiled parts of the projector with a soft cloth.
- When the soiling is severe, wipe the area with a cloth moistened with a medium-strenth cleaning agent diluted with water, and then gently wipe it with a dry cloth.
  Never use wax, Benzene, thinner or other active agents. Failure to observe this may result in damage or paint peeling from the casing.

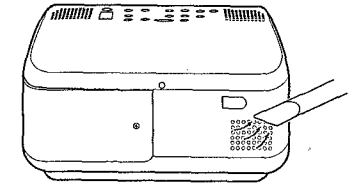
### Cleaning the lens

Clean the lens with an air-blower (available on the open market) and special lens cleaning paper. The surface of the lense is easily damaged, so exercise extreme caution and avoid using anything other than soft materials.

### Cleaning the air filter and lamp suction inlet

Allowing dust and dirt to accumulate in the air filter and ventilation inlet will result in deteriorated airflow, shortened lamp life-span, the necessity to replace the optical parts, cooling fan and air filter, and increased internal temperatures, leading to subsequent damage.
When cleaning the air filter on the rear panel, use a vacuum cleaner with the projector in the upright position to suck out all dust and dirt, while ensuring that no foreign objects enter the projector.





**Point**

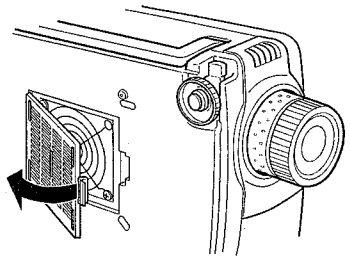
- If it is no longer possible to remove the dirt from the Air Filter or it begins to crack, it is time to replace it. Contact your dealer in this event.
- A replacement air filter is packaged with the replacement lamp. Replace the Air Filter at the same time as replacing the lamp.

# ■ Replacing the Air Filter

## Replacement method

**1** Switch off the power supply, allow the projector to cool down, and then disconnect the Power Cord. The amount of time required for the projector to cool down will depend on the surrounding temperature.

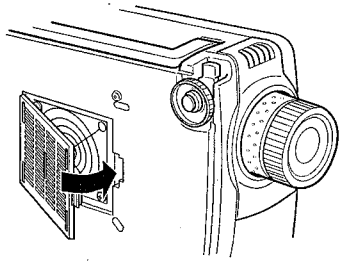
**2** Remove the Air Filter.



**Note**

Ensure that the projector is placed on its side when replacing the Air Filter to prevent the dirt and dust from penetrating inside.

**3** Set a new Air Filter in place.



**Note**

- Insert the clips before pressing on the catch to set the air filter in place.
- Dispose of used air filters in accordance with waste regulations in your community.

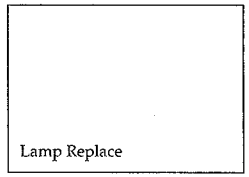




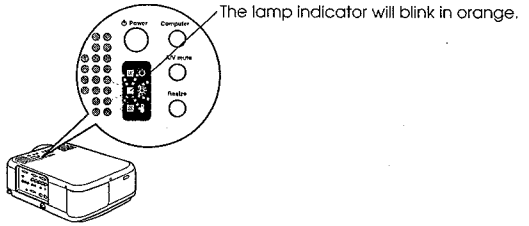
# ■ Replacing the Lamp

Replace the lamp at the following times (model number: BHNEELPLP12-SA).

**When a message stating [Lamp Replace] is displayed for thirty seconds after the start of projection**




**When the lamp indicator is blinking in orange**




**When the brightness and picture quality has deteriorated below the initial levels**

**Point**

- To maintain initial brightness and picture quality, ensure that the lamp is replaced immediately after the replacement display has appeared.
- The replacement display will show approximately 1,400 hours as a yardstick for the period of lamp replacement.
- The replacement display is only a yardstick for the period of lamp replacement and is not a guarantee of the lamp's life span.
- There are cases where the lamp will fail to illuminate prior to the replacement display appearing, depending on the characteristics, usage conditions and usage environment of each individual lamp, so it is recommended that a spare lamp is prepared beforehand.
- The lamp is a consumable item and therefore not covered by the warranty. Damage, failure to illuminate, reduced brightness and flickering (on-screen flickering) caused through the use of the lamp are not covered by the warranty.
- Ensure that the separately sold LX-D3000ZU/LX-D3000ZE light-source lamp is used as the spare lamp. Spare lamps can be ordered from your dealer or nearest service office of our company.
- Light-source lamps are to be replaced by the user. Technical and visiting rates will be charged in addition to the cost of the lamp if replacement is carried out by your dealer or nearest service office of our company.

**⚠ Warning**

To maintain initial brightness and picture quality, ensure that the lamp is replaced immediately after the replacement display has appeared.

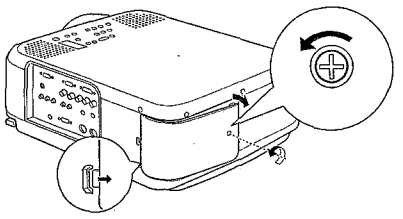
## Replacement method

**1** **Switch off the power supply, allow the projector to cool down, and then disconnect the Power Cord.**

The amount of time required for the projector to cool down will depend on the surrounding temperature.

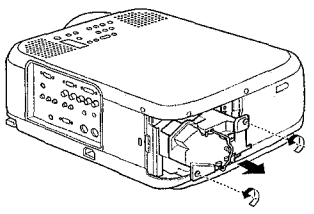
**2** **Remove the lamp cover only after the lamp has cooled sufficiently.**

- It will take at least 60 minutes for the lamp to cool sufficiently.
- Loosen the screw holding the lamp cover in place with the screwdriver provided for lamp replacement purposes, and then slide the right side of the lamp cover toward you and disengage the hook. Then free the left side and remove the cover.



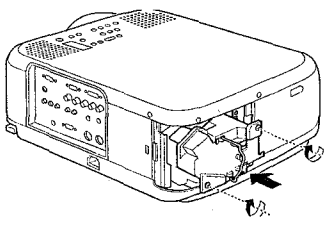
**3** **Withdraw the lamp.**

Loosen the two screws holding the lamp in place, and then pull the lamp out towards you.



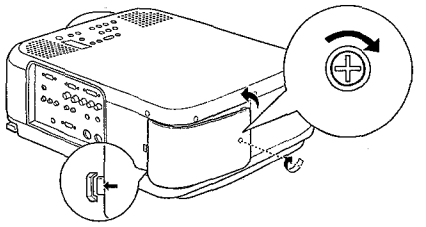
**4** **Attach a new lamp.**

Align the direction, push the lamp in as far as it will go, and then secure it in place with the two screws.



**5** **Attaching the lamp cover.**

First attach the hook on the left side of the lamp cover, and then the right. Snap the cover into place and secure with the screw.



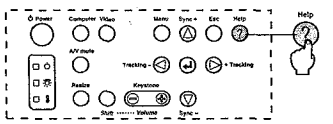
**Point**

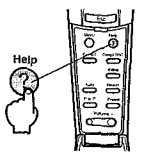
- Attach the lamp and lamp cover firmly. The power will not be reinstated unless the lamp and lamp cover are set firmly in place.
- A replacement Air Filter is packaged with the replacement lamp. Replace the Air Filter at the same time as replacing the lamp.
- Ensure that the lamp illumination time is reset in accordance with the following procedure after the lamp has been replaced with a new one.

## Resetting the lamp illumination time

**1** **Press the [Help] button for five or more consecutive seconds.**

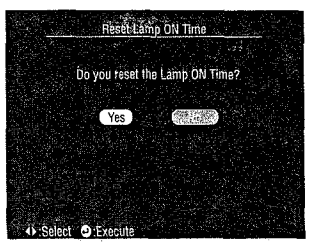
The screen for resetting the lamp's illumination time will be displayed after the help menu has been displayed.





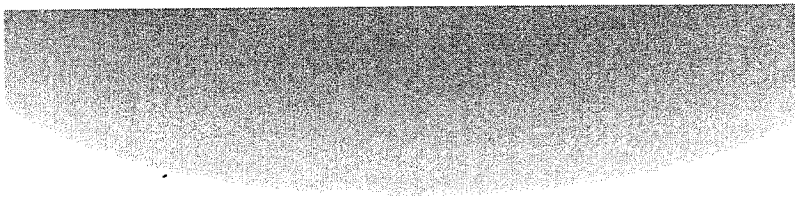

**2** **Select [Yes]**

Press the [Tracking +, -] on the main unit (lower the [Enter] button on the remote control unit) and select [Yes].




**3** **Execution**

Press the [↵ (Enter)] button on the main unit or the [Enter] button on the remote control unit to execute the process.



# Others

**This section provides details on technical topics, such as after-service care, specifications and terminology.**

## ■ Transportation

The projector contains many glass and precision parts. Ensure that the following precautions are observed to prevent the projector from being damaged by impact during transportation.

### ● When sending the projector to the manufacturer for repairs, etc.

- Use the box in which the projector was packed at the time of purchase.
- If the box is no longer available, protect the projector by wrapping it in shock-proof material to prevent impact, and then place it in a strong cardboard box for transportation purposes.

### ● When transporting repeatedely

- Place the projector in the optional Hard Travel Case (ELPKS25) and clearly mark that it is a precision instrument for the delivery people, and then request transportation.
- It is recommended that the [Handle With Care] stickers are attached to the Hard Travel Case during transportation.





## ■ Terminology

This section provides simple explanations for the terminology used within the manual, items for which explanations are not available, and other complex processes.

| | |
|---|---|
| A/V Mute | Temporarily mutesthe image and sound. The sound and image can be muted by pressing the [A/V Mute] button on the projector. Press the [A/V Mute] button once again or adjust the volume or display the menu to cancel the mute mode. |
| DVI-D port | The input port that conforms to the DVI digital video ratings (Digital Visual Interface: Ratings to govern how video signals are digitally transmitted). Synchronization and tracking misalignments will not occur during transmission. |
| D output port | The output port for digital tuners that support the new digital broadcasts within Japan. |
| Remote port | Cannot be used with this projector. |
| SVGA | IBM PC/AT compatible (DOS/V equipment) signals with 800 horizontal pixels and 600 vertical pixels. |
| SXGA | IBM PC/AT compatible (DOS/V equipment) signals with 1,280 horizontal pixels and 1,024 vertical pixels. |
| Sync(synchronization) | Outputs computer signals at a pre-determined frequency. The image will not be projected clearly unless this frequency is aligned with the frequency of the projector. Aligning the signal phasing is known as synchronization. Projected images will be subject to distrubance, blurring and horizontal noise if not synchronized. |
| VGA | IBM PC/AT compatible (DOS/V equipment) signals with 640 horizontal pixels and 480 vertical pixels. |
| XGA | IBM PC/AT compatible (DOS/V equipment) signals with 1,024 horizontal pixels and 768 vertical pixels. |
| USB | An abbreviation for Universal Serial Bus. This is an interface for connecting comparitively low frequency equipment to the computer. |
| UXGA | IBM PC/AT compatible (DOS/V equipment) signals with 1,600 horizontal pixels and 1,200 vertical pixels. |
| Color temperature | The temperature of the subject that emits light. A blue hue is attained when the color temperature is high, and a red hue is attained when the color temperature is low. |
| Color differential signal | Video equipment transmits signals through three cables as Red-Bright (R-Y), Bright (Y) and Blue-Bright (B-Y). This enables the composite signals (the red, green and blue signals and their brightness signals are transmitted along one cable) to be projected more clearly. |
| Operating system | The software necessary to operate the computer. |
| Cool-down | A lamp cooling procedure continues to operate even after the power supply has been switched off and the lamp extinguished. The cooling fan will begin to operate when the lamp is entinguished, and button operations will not longer be possible. This period is known as the cooling down period. The amount of time required for the cooling down procedure will differ in accordance with the surrounding temperature. |
| Contrast | By strengthening or weakening the tone of the colors, it is possible to project characters and pictures more clearly and attain a softer tint. This is known as contrast adjustment. |

| | |
|---|---|
| Stack projection | Refers to the simultaneous duplicate projection of images with the use of multiple projectors in order to increase projection image brightness. |
| Theft-protection lock | A theft-proof cable (available on the open market) is passed through the holes on the projector case to secure it to a desk or column. These holes support the Micro-Saver Security System manufactuered by Kensington Inc. |
| Tracking | Outputs computer signals at a pre-determined frequency. The image will not be projected clearly unless this frequency is aligned with the frequency of the projector. Aligning the signal frequency is known as tracking. Projected images will be subject to distrubance, blurring and horizontal noise if not synchronized. |





# Specifications

| | | |
|---|---|---|
| Product Name | Multi-media supported liquid crystal projector. | |
| Model | LX-D3000ZU/LX-D3000ZE | |
| External Dimensions | Width 277 × Height 143 × Depth 361 mm(excluding the lens and feet) | |
| Panel Size | 1.3-inch (Width 27mm × Height 20mm × Corner-to-corner 34 mm) | |
| Display Emthod | Poly-silicone TFT | |
| Drive Method | Full-line 12-phase block sequential writing | |
| Pixel Count | 786,432 (Horizontal 1,024 × Vertical 768 pixels × 3) | |
| Focus Adjustment | Manual | |
| Zoom Adjustment | Manual (approximately 1:1.3) | |
| Lamp (light source) | UHE lamp model: BHNEELPLP12-SA rated 200W | |
| Maximum Sound Output | 3W × 3W stereo | |
| Speakers | 2 | |
| Power Supply | 100-240VAC 50/60Hz 3.4A-1.7A approximately 285W, 9W during power-saving | |
| Temperature range during use | +5 to +40(with no condensation) | |
| Temperature range during storage | -10 to +60(with no condensation) | |
| Weight | Approximately 6.9kg | |
| Connection ports | Computer #1 port | Single-system mini D-Sub 15pin(female)/ DVI-D port (switch) |
| | Monitor Out port | Single-system mini D-Sub 15pin(female) |
| | Audio port (for use with Computer #1) L-Audio-R port | Single-system Stereo mini-jack |
| | (For use with S-Video / BNC) | Single-system RCA pin jack × (L, R) |
| | L-Audio-R port (for video use) | Single-system RCA pin jack × (L, R) |
| | Mouse port | 2-system DIN 10pin |
| | BNC connection port | Single-system 5BNC(female) |
| | Video port | Single-sysem RCA pin jack |
| | S-Video port | Single-system mini DIN 4pin |
| | Remote port | Single-system Stereo mini-jack |
| | Audio Out | 1-system stereo mini jack |
| | Control port | 1-system RS-232C |

# ■ Check Sheet

Kindly take a copy of the check sheet and fill out the relevant items before contacting us in order to provide us with details on the systems of the trouble that has occurred with your projector.

## ● Images

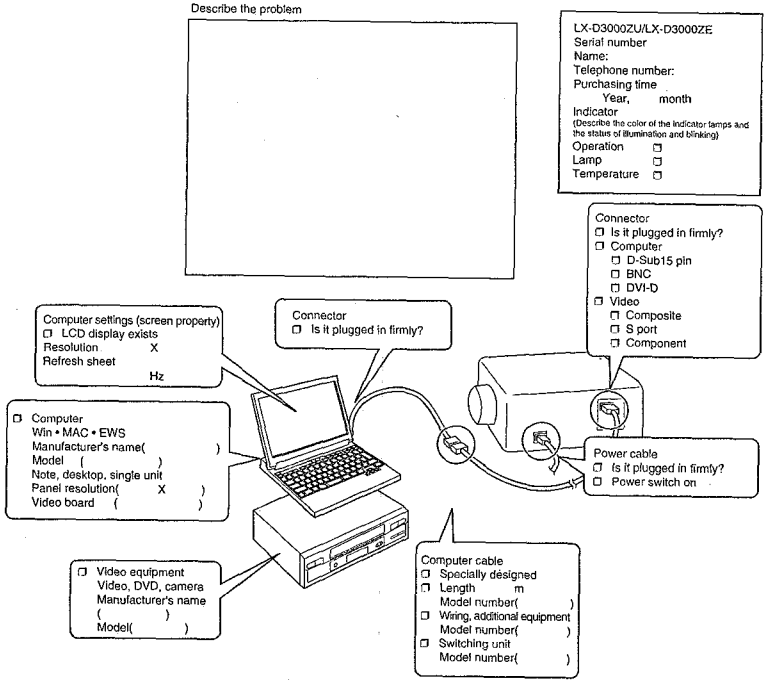
**Inquiry details**
- ❒ The power supply cannot be switched on
- ❒ Nothing is displayed on the screen
- ❒ A message is displayed
  - ❒ NO SIGNAL
  - ❒ The image signals are not being input
  - ❒ The projector is not able to receive the signals
- ❒ Blue screen (blue back)
- ❒ Projection pattern
- ❒ Logo (the message is not displayed)

The image breaks up or is too small
- ❒ An area on which nothing is displayed exists
- ❒ The image is smaller than the screen
- ❒ The screen is distorted into a trapezoid shape
- ❒ Certain dots are missing

The image is not clear
- ❒ The image is blurred or cannot be focused.
- ❒ Stripes are displayed
- ❒ Flickering
- ❒ Certain characters are missing

The color or the image is bad or too dark
- ❒ Dark
- ❒ The color is bad or dark (computer)
- ❒ The color is bad or dark (video)
- ❒ The color is different on a TV and CRT

**Menu**
- ❒ The menu is displayed
  - Setup ❒ Sleep Mode ON
- ❒ Information (computer)
  - Lamp ON Time H
  - Frequency H Hz
  - SYNC polarity H ❒ Positive ❒ Negative
    V ❒ Positive ❒ Negative
  - SYNC mode ❒ Separate ❒ Composite
    ❒ Sync on Green
  - Input resolution X
  - Refresh sheet Hz
- ❒ Information (video)
  - Lamp ON Time H
  - Video signal system ❒ AUTO ❒ NTSC ❒ Others




Always occurs when _____ is performed, etc.

Time of occurrence ❒ Before use. ❒ Immediately after the start of usage. ❒ During usage. ❒ Other.( )
Frequency of occurrence ❒ Always. ❒ Sometimes ( __ times per __ usage). ❒ Other.( )



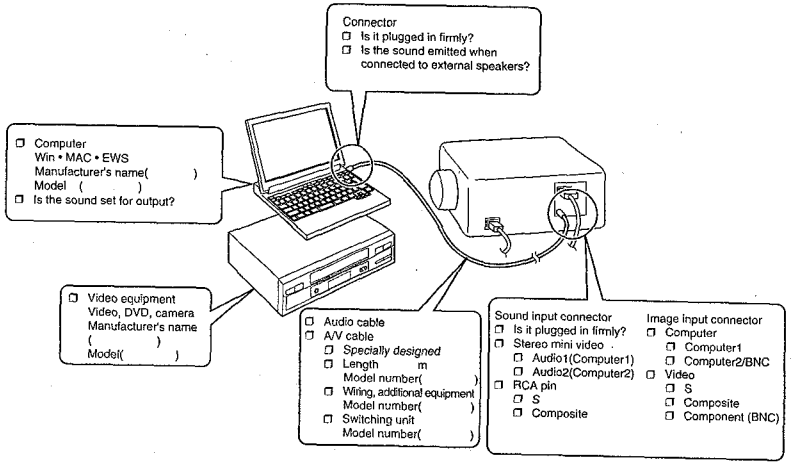
## ● Sound

**Inquiry details**
- ❒ No sound can be heard
- ❒ The volume is too low
- ❒ The sound breaks up
- ❒ A different sound is emitted

**Menu**
- ❒ The menu is displayed
  - Sound
  - ❒ Volume( )

LX-D3000ZU/LX-D3000ZE
Serial number

Purchasing time
Year, month
Name:
Telephone number:




Always occurs when _____ is performed, etc.

Time of occurrence ❒ Before use. ❒ Immediately after the start of usage. ❒ During usage. ❒ Other.( )
Frequency of occurrence ❒ Always. ❒ Sometimes ( __ times per __ usage). ❒ Other.( )

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13w3 30
5BNC 30, 31

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## List of Supported Resolutions

| Signal | Horizontal scan frequency (KHz) | Refresh rate (vertical scan frequency) | Resolution (dots) |
|---|---|---|---|
| PC98 | 24.83 | 56.65 | 640x400 |
| VGACGA | 31.46 | 70.00 | 640x400 |
| VGAEGA | 31.46 | 70.00 | 640x350 |
| VGA | 31.469 | 59.94 | 640x480 |
| VESA 72 | 37.861 | 72.809 | 640x480 |
| VESA 75 | 37.50 | 75.00 | 640x480 |
| VESA 85 | 48.269 | 85.008 | 640x480 |
| VESA 100 | 51.00 | 100.00 | 640x480 |
| VESA 120 | 61.00 | 120.00 | 640x480 |
| SVGA 56 | 35.156 | 56.25 | 800x600 |
| SVGA 60 | 37.879 | 60.317 | 800x600 |
| SVGA 72 | 48.077 | 72.188 | 800x600 |
| SVGA 75 | 46.875 | 75.00 | 800x600 |
| SVGA 85 | 53.674 | 85.061 | 800x600 |
| SVGA 100 | 63.00 | 100.00 | 800x600 |
| SVGA 120 | 76.00 | 120.00 | 800x600 |
| XGA 43i | 35.522 | 86.958 | 1024x768 |
| XGA 60 | 48.363 | 60.004 | 1024x768 |
| XGA 70 | 56.476 | 70.069 | 1024x768 |
| XGA 75 | 60.023 | 75.029 | 1024x768 |
| XGA 85 | 68.677 | 84.997 | 1024x768 |
| XGA 100 | 81.00 | 100.00 | 1024x768 |
| XGA 120 | 97.00 | 120.00 | 1024x768 |
| SXGA 70 | 63.851 | 70.012 | 1152x864 |
| SXGA 100 | 90.00 | 100.00 | 1152x864 |
| SXGA 43i | 46.433 | 86.871 | 1280x1024 |
| SXGA 60 | 60.00 | 60.00 | 1280x960 |
| SXGA 60 | 63.981 | 60.02 | 1280x1024 |
| SXGA 75 | 67.50 | 75.00 | 1152x864 |
| SXGA 75 | 75.00 | 75.00 | 1280x960 |
| SXGA 75 | 79.976 | 75.025 | 1280x1024 |
| SXGA 85 | 77.094 | 84.999 | 1152x864 |
| SXGA 85 | 85.938 | 85.002 | 1280x960 |
| SXGA 85 | 91.146 | 85.024 | 1280x1024 |
| SXGA +60 | 65.22 | 60.00 | 1440x1080 |
| SVGA +60 | 63.96 | 60.00 | 1400x1050 |
| UXGA 48i | 62.50 | 96.08 | 1600x1200 |
| UXGA 60 | 75.00 | 60.00 | 1600x1200 |
| UXGA 65 | 81.25 | 65.00 | 1600x1200 |
| UXGA 70 | 87.50 | 70.00 | 1600x1200 |
| UXGA 75 | 93.75 | 75.00 | 1600x1200 |
| UXGA 80 | 100.00 | 80.00 | 1600x1200 |
| UXGA 85 | 106.25 | 85.00 | 1600x1200 |
| MAC13 | 35.00 | 66.67 | 640x480 |
| iMAC VGA | 60.49 | 117.00 | 640x480 |
| iMAC SVGA | 60.33 | 95.00 | 800x600 |
| MAC16 | 49.725 | 74.55 | 832x624 |
| MAC19 | 48.193 | 59.28 | 1024x768 |
| MAC19 | 60.241 | 74.93 | 1024x768 |
| iMAC XGA | 60.00 | 75.00 | 1024x768 |
| MAC21 | 68.682 | 75.062 | 1152x870 |
| NTSC(XGA) | 15.734 | 60.00 | |
| PAL(XGA) | 15.625 | 50.00 | |
| SECAM(XGA) | 15.625 | 50.00 | |
| SDTV486p | 31.469 | 59.94 | |
| SDTV486i | 15.734 | 59.94 | |
| HDTV720p | 44.955 | 59.94 | |
| HDTV1080i | 33.716 | 59.94 | |

# DECLARATION of CONFORMITY

***Dear Customer,***

***This apparatus is in conformance with the actual valid European directives and standards regarding electromagnetic compatibility and electrical safety. For evidence this apparatus is marked with CE.***

***The declaration of conformity was issued by JVC Technology Centre Europe GmbH, 61145 Friedberg, P. O. Box 10 05 52.***

(PA013)

# DECLARATION of CONFORMITY

According to 47CFR, Part 2 and 15 for

**Class B Personal Computers and Peripherals; and/or CPU Boards and Power Supplies used with Class B Personal Computers**

We : PSEL Dept, JVC America Corp.

Located at : 1700 Valley Road
Wayne, N.J. 07407
Telephone Number: (973)315-5000

Declare under sole responsibility that the product identified herein, complies with 47CFR Part 2 and 15 of the FCC rules as a Class B digital device. Each product marketed, is identical to the representative unit tested and found to be compliant with the standards. Records maintained continue to reflect the equipment being produced can be expected to be within the variation accepted, due to quantity production and testing on a statistical basis as required by 47CFR 2.909 Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Trade Name : JVC**

**Type of Product : LCD Projector**

**Model : LX-D3000ZU/LX-D3000ZE**

## FCC Compliance Statement
## For United States Users

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna.
- ncrease the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## WARNING

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification or Declaration of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

## For Canadian Users

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.
Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

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- IBM/International Business Machines, Inc.
- Windows 95, Windows 98, Windows NT4.0/Microsoft Corp.

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# 1. Field Service

## 1.1 Repair methods

Basically, the parts structuring this product are handled as single parts. Thus, servicing shall consist of the replacement of major PWBs and parts.

1. The following table shows the repair methods for the main parts.

| Parts name | Repair method | Parts name | Repair method |
|---|---|---|---|
| Speaker unit | Replace | Optical engine | Repair |
| Power PWB ass'y | Replace | IF PWB ass'y | Replace |
| Ballast unit | Replace | Main PWB ass'y | Replace/repair |
| Receptor PWB ass'y | Replace | | |

**Notes:**

- **"Repair" refers to parts subject to factory repair and "Replace" refers to parts subject to replacement.**
- **The driver PWB ass'y is considered a part of the optical engine and cannot be detached.**
- **Defective parts during parts replacement shall be scrapped.**
- **Factory repairs will not be performed on parts other than those specified as "Repair."**
- **Pinpoint the defective part during the field service and send only the part subject to factory repair by the method instructed. Factory repair will not be performed if the entire projector is received.**
- **It is recommended to prepare parts that require time for repair.**
- **Order service parts from the World Parts Center as usual.**

## 1.2 Factory repairs

(1) Make sure to fill in completely the client name, address, telephone/fax numbers, S/N of the part subject to repair, detailed report of the symptoms, and set S/N in the PARTS REPAIR ORDER FORM FOR LX-D3000ZU/ZE.

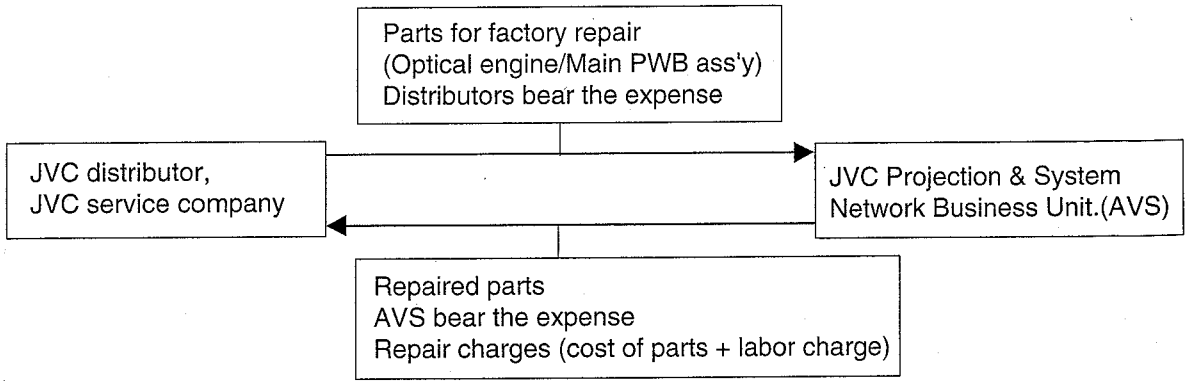
(2) Attach the PARTS REPAIR ORDER FORM FOR LX-D3000ZU/ZE to the part to be repaired and ship to the factory repair center indicated on the next page.

(3) Use specified antistatic bag and shipping case when shipping to prevent damage to the part subject to repair. Use double packaging when shipping the optical engine as well as other steps thought useful for preventing damage. Parts for factory repair will not be accepted when the specified antistatic bag or shipping case is not used. For details on packing repair parts, see the page concerning packing method.

(4) Allow approximately 4 working weeks for repairs. Please note that, in some cases, even more time will be required in the case of extended holidays.

(5) The Service Engineering Section AVS Engineering Department does not advance replacement parts.

(6) Repair charges




(7) Always attach the PARTS REPAIR ORDER FORM OF LX-D3000ZU/ZE with the part for repair and ship to the factory repair center below:

Service Engineering section
System Engineering Dept.
Projection & System Network Business Unit.
Victor Company of Japan, Limited
Yamato Plant 1644, Shimotsuruma,
Yamato, Kanagawa 242, Japan
TEL: +81-46-278-1843
FAX: +81-46-278-1850

**Note:**

**Parts are stored using the PARTS REPAIR ORDER FORM OF LX-D3000ZU/ZE. To prevent mixing and loss of parts, parts for repair without the order form will not be accepted.**

# PARTS REPAIR ORDER FORM OF LX-D3000ZU/ZE

| | |
|---|---|
| TO: | Service Engineering Section<br>System Engineering Dept.<br>Projection & System Network Business Unit<br>Victor Company Of Japan,Limited<br>Yamato Plant 1644, Shimotsuruma,<br>Yamato, Kanagawa 242, Japan<br>Tel:0462-78-1843<br>Fax:0462-78-1850 |

| FROM: | | |
|---|---|---|
| | Manager | |
| | Originator | |
| | Date | |
| | Sheet NO. | |
| | Set S/N | |

| | |
|---|---|
| Part | Optical Engine with Driver Board<br>☐ (LX-D3000ZU/ZE) S/N:<br><br>Main Board Ass'y<br>☐ (LX-D3000ZU/ZE) S/N: |
| Failure description | |
| Packing attention | 1 Lamp inner housing, a lamp fan, a safety switch, lamp thermistor, LF fixing plate, and a reinforcement duct are detached from an optical engine.<br>2 The driver board assy and it's optical engine are always the combination of the couple. When the driver board assy is sent to factory, it is necessary to send the driver board with it's optical engine and viceversa. (Do not remove the driver board from an optical engine. )<br>3 It is preferable to put the optical engine in a special commuting cartonbox the parts NO.are listed on service manual furthermore pack it in a larger cartonbox.<br>4 It must be sure to provide proper packing so that no electrostatic and shipping destruction occurs.<br>5 Repairable parts are only optical engine and main board assy, other parts are consumption.<br>6 Issueing of this parts repair order form should be one sheet every part.<br>7 Repair charge consists of parts-cost,labor-charge and sundry-expenses that varies in contents.<br>8 About 4 weeks delivery date for repair in Japan is required,however when it meet consecutive holidays of the factory these days might be exceeded. |

JVC/AVS

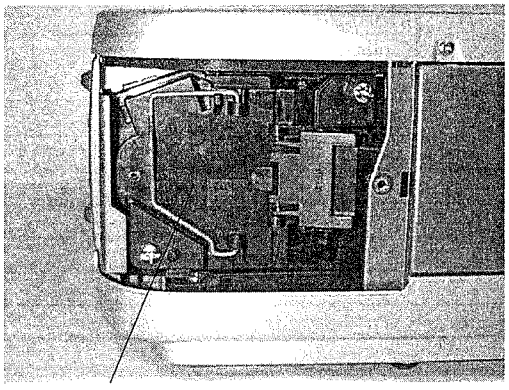
# 2. Packing Method

## 2.1 Optical engine

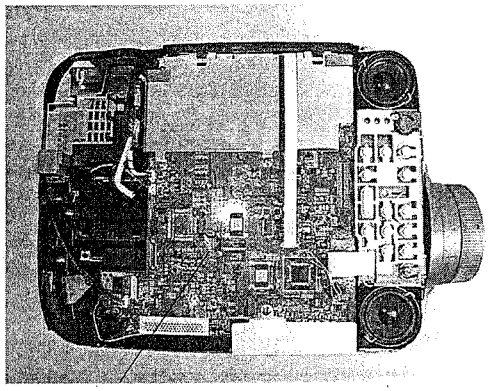
When shipping the optical engine, always use the specified polyvinyl bag and shipping case, and pack as shown below.

For removing the optical engine, see 7. Disassembly and Reassembly.

(1) Packing method

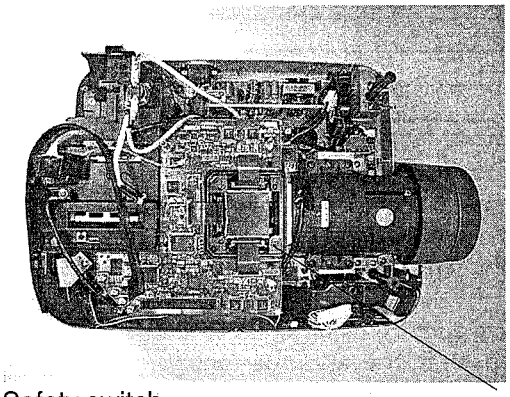


Lamp inner housing

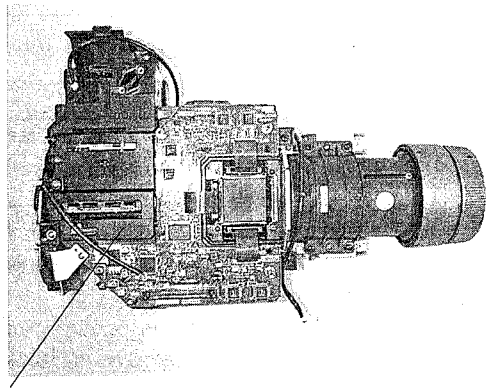


Main PWB ass'y

1) Remove the lamp inner housing
2) Remove the main PWB ass'y.

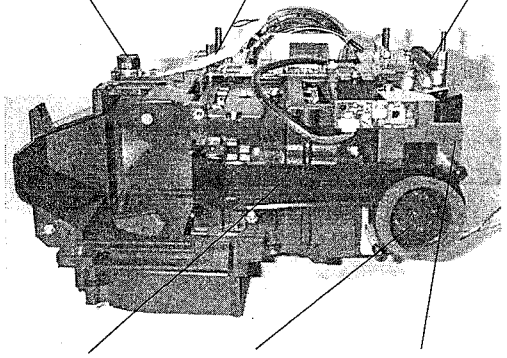


Safety switch



Optical engine

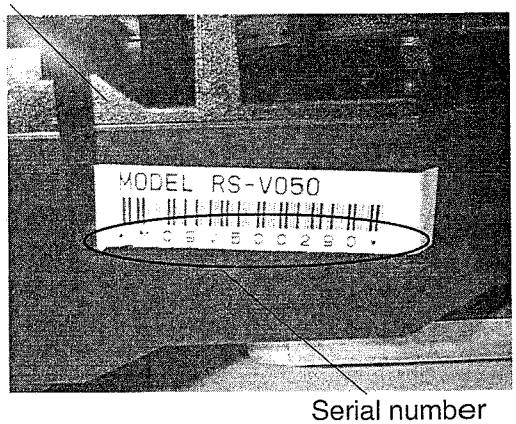
Lamp thermistor



Reinforcement duct

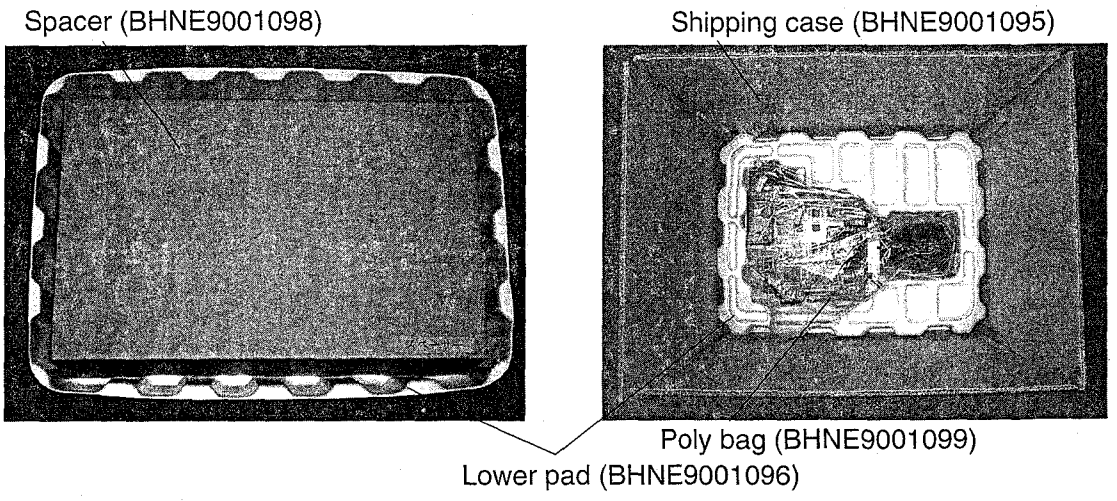
L fan

LF fixing plate

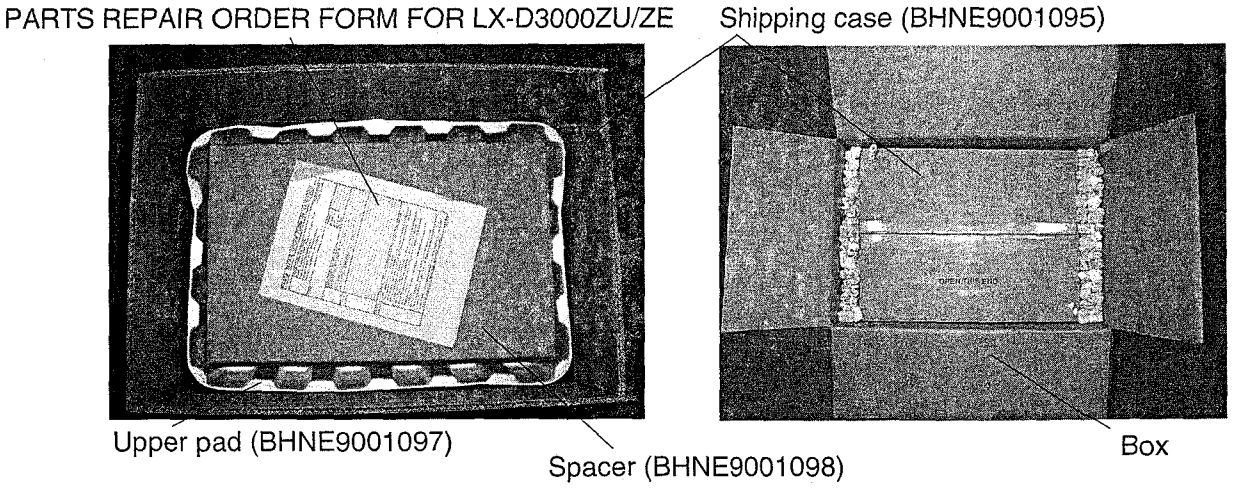



Serial number

3) Remove the optical engine.
4) Remove any dust adhered to the optical engine using a vacuum cleaner, etc.
5) Remove the safety switch, lamp thermistor, reinforcement duct, L fan and LF fixing plate.




6) Set the spacer on the lower pad and place it in the shipping case.
7) Place the optical engine in the poly bag.
8) Place the optical engine on the lower pad.



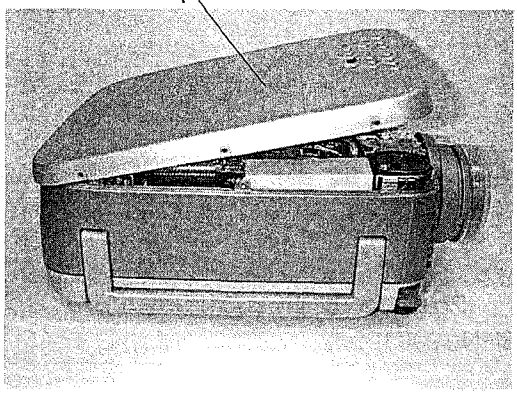

9) Cover the optical engine using the upper pad and place the spacer.
10) Attach the PARTS REPAIR ORDER FORM FOR LX-D3000ZU/ZE filled out with the required items.
11) Place the shipping case with the optical engine inside in a suitable box as double packing.

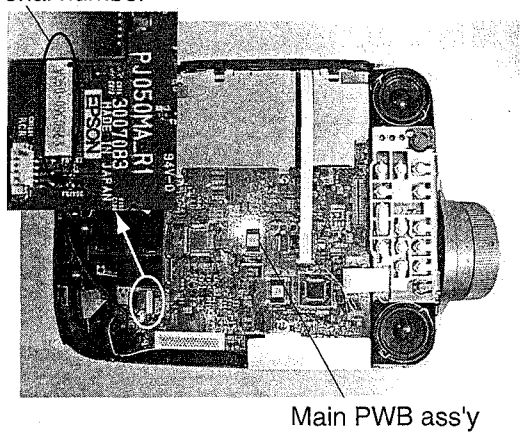
**Notes:**

- **When shipping the optical engine, it is necessary to prepare the specified shipping case, spacers (2 units), upper pad, lower pad and poly bag.**
- **Store parts other than the optical engine in a safe place until the repair is completed.**

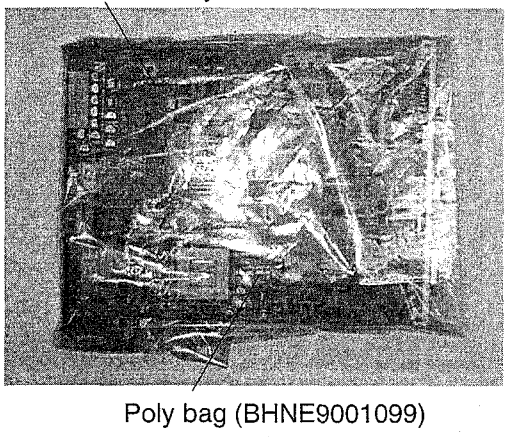
## 2.2 Main PWB ass'y

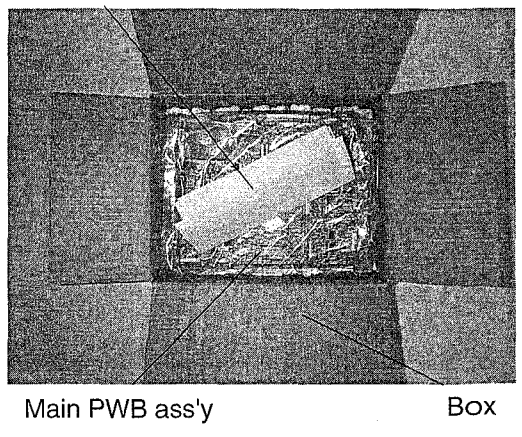
When shipping the main PWB ass'y, always use the specified poly bag, and pack as shown below.
For removing the main PWB ass'y, see 7. Disassembly and Reassembly.
(1) Packing method




1) Remove the top cover.
2) Remove the main PWB ass'y



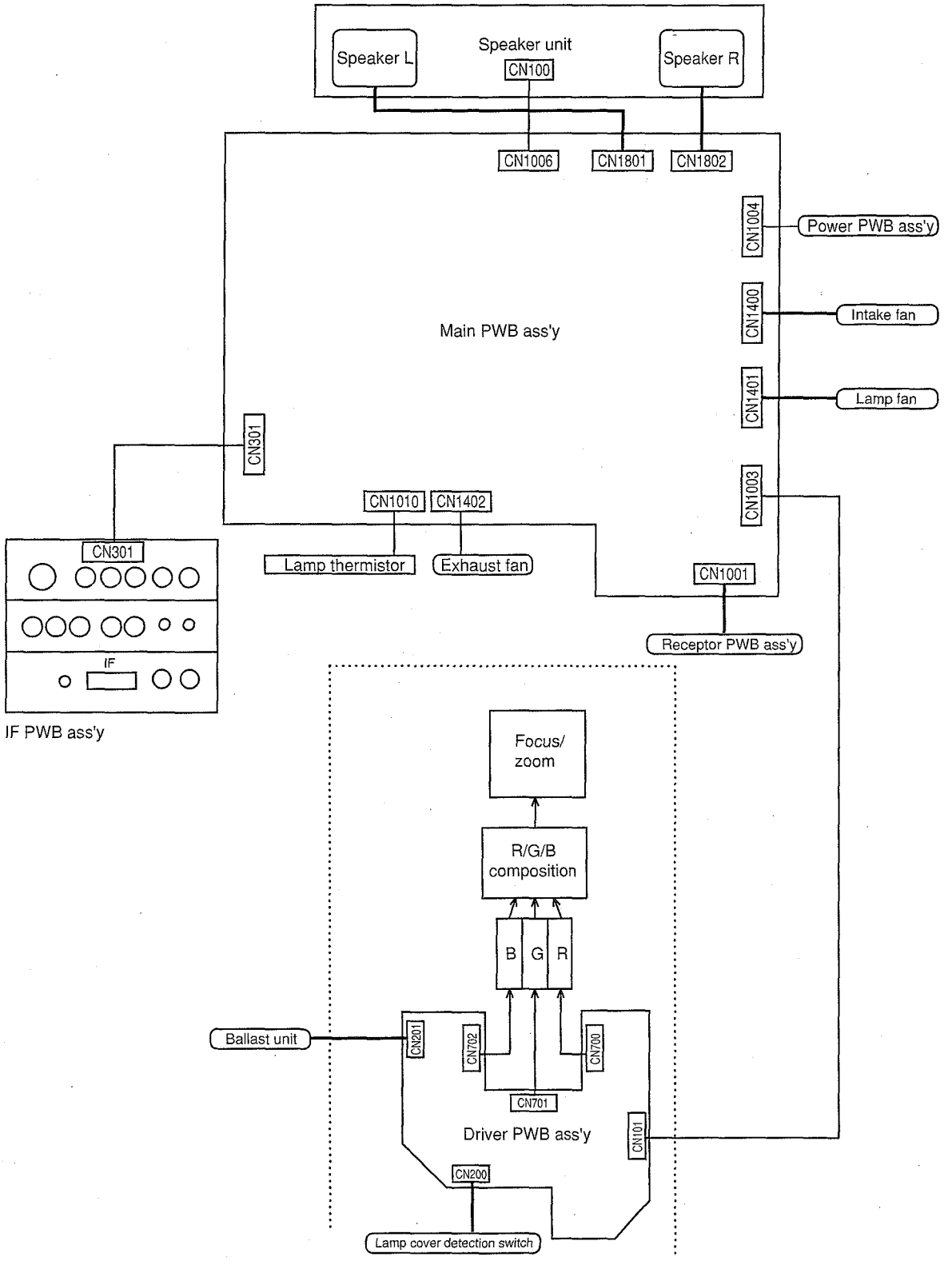

3) Place the main PWB in the poly bag.
4) Place the main PWB ass'y in a suitable box using packing material to prevent any shock.
5) Attached the PARTS REPAIR ORDER FORM FOR LX-D3000ZU/ZE filled out with the required items.

**Notes:**

- **When shipping the main PWB ass'y, it is necessary to prepare the specified poly bag.**
- **To prevent damage to the PWB from static electricity, always use the specified poly bag.**
- **Store parts other than the main PWB ass'y in a safe place until the repair is completed.**

## 3. Hardware configuration

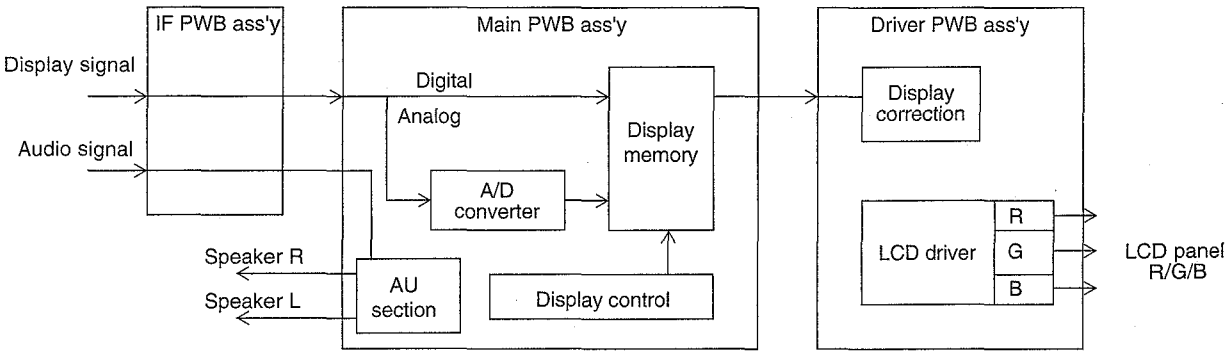
The hardware of this product is divided into two systems: optical and electrical. The following diagram shows the hardware block configuration. The optical system is indicated by the dotted line (...).



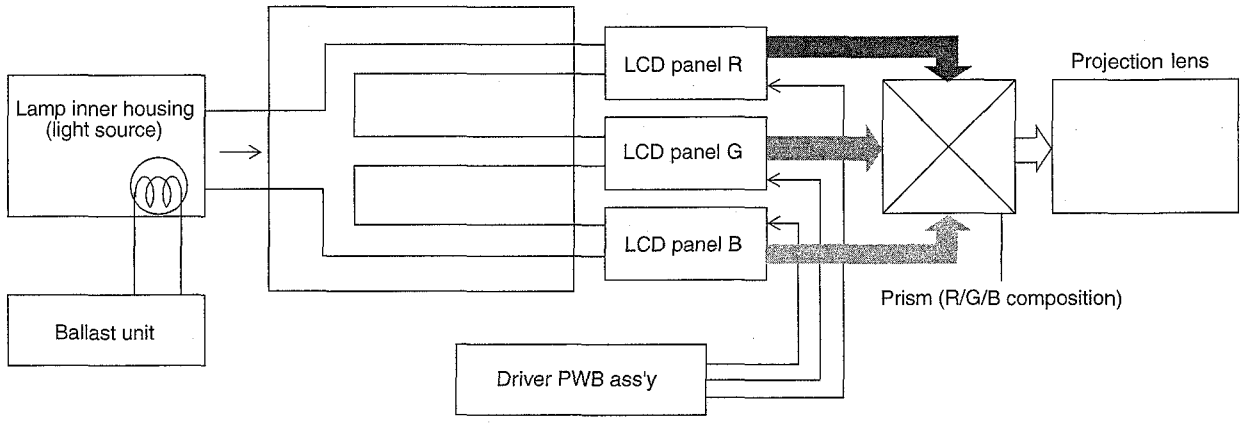
## 3.1 Operation overview

① Display signals are supplied to the main PWB ass'y from the IF PWB ass'y (analog signals are converted to digital signals at the main PWB ass'y).
② The driver PWB ass'y creates signals to operate the R, G and B of the LCD panel after video signals (digital) are cached in the video memory of the main PWB ass'y.
③ LCD panel R, G and B are three separate panels, and transmits or cuts off light supplied from the light source lamp.
④ The light transmitted through the above-mentioned LCD panel is combined using the prism, and images are projected using the projection lens.
⑤ Audio signals are supply to the main PWB ass'y from the IF PWB ass'y and outputted to speaker L/R.

### Circuit operation block diagram




### Optical operation block diagram



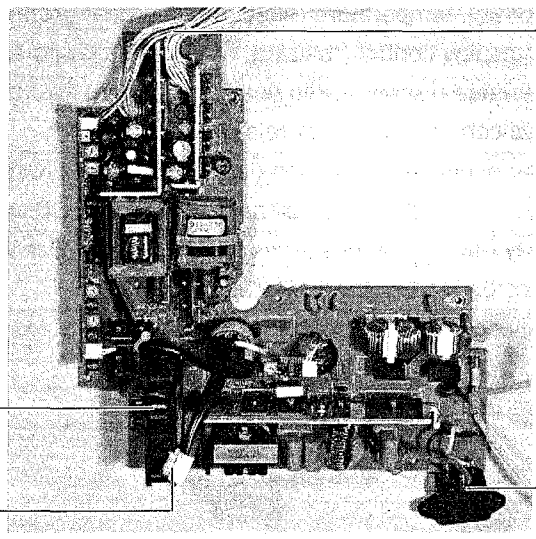
## 3.2 Circuit system unit

For the circuit system of LX-D3000ZU/ZE, units are connected with the main PWB ass'y as the center as shown below. This page describes the functions of each circuit unit.

| | Unit name | Functions |
|---|---|---|
| 1. | Main PWB ass'y | Power on/off, ballast power on/off (for light source lamp), circuit reset, cooling fan control, temperature detection (overheat protection), saving of display data, display control (resizing, etc.), display data and timing signal generation, lamp(status)display, audio data control, remote controller/operation panel control, mouse control, DC power relay, audio control |
| 2. | Driver PWB ass'y (optical engine) | Saving of display correction data, display data readout, analog conversion (D→A), LCD panel drive signal generation, LCD panel voltage generation |
| 3. | IF PWB ass'y | Display data I/O, interface connector, audio I/O interface connector, BNC interface connector, mouse/serial interface connector |
| 4. | Receptor PWB ass'y (Front/Rear) | Receiving of remote controller infrared signals, serial data transmission |
| 5. | Operation panel | Switch (matrix) signal generation |

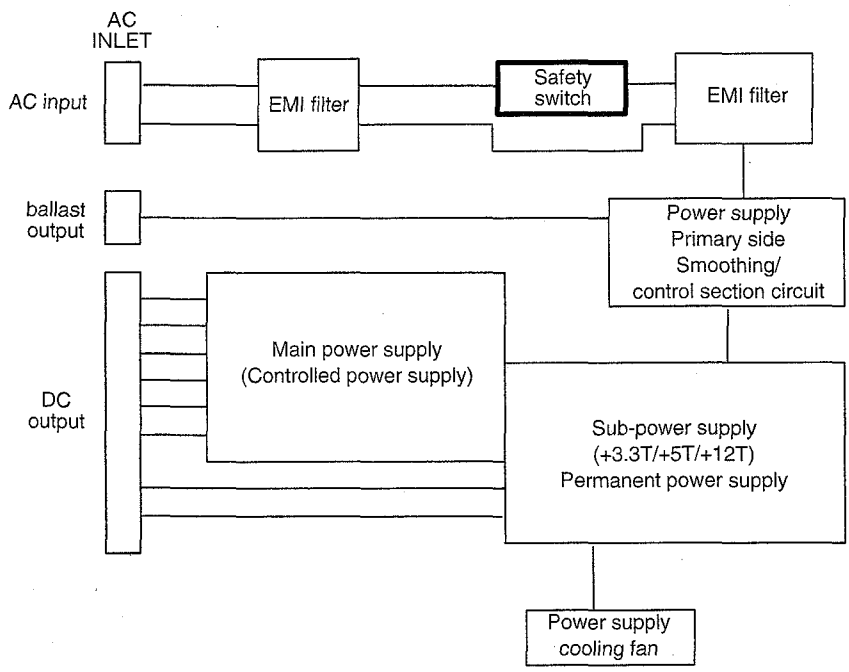
## 3.3 Power PWB ass'y

The functions of the power unit are divided into two parts: the section from the EMI filter to the sub-power supply (primary side) and the main power supply (secondary side). The sub-power supply operates constantly regardless of whether the power is on or off. The main power supply section is controlled by the power supply control signal (PW ON) outputted by the main PWB ass'y.


DC output/signal cable
(Connected to the Main PWB ass'y)
Power supply cooling fan
(Operates with AC input)
Ballast power supply connector
AC input connector

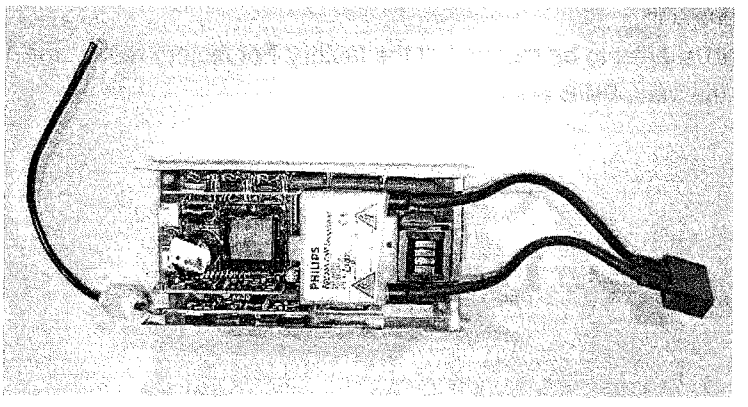
### Power PWB ass'y circuit block diagram

The power PWB ass'y is a unit built with an EMI filter circuit, safety circuit (safety switch), power supply cooling fan), sub-power supply circuit and smoothing/control section circuit.

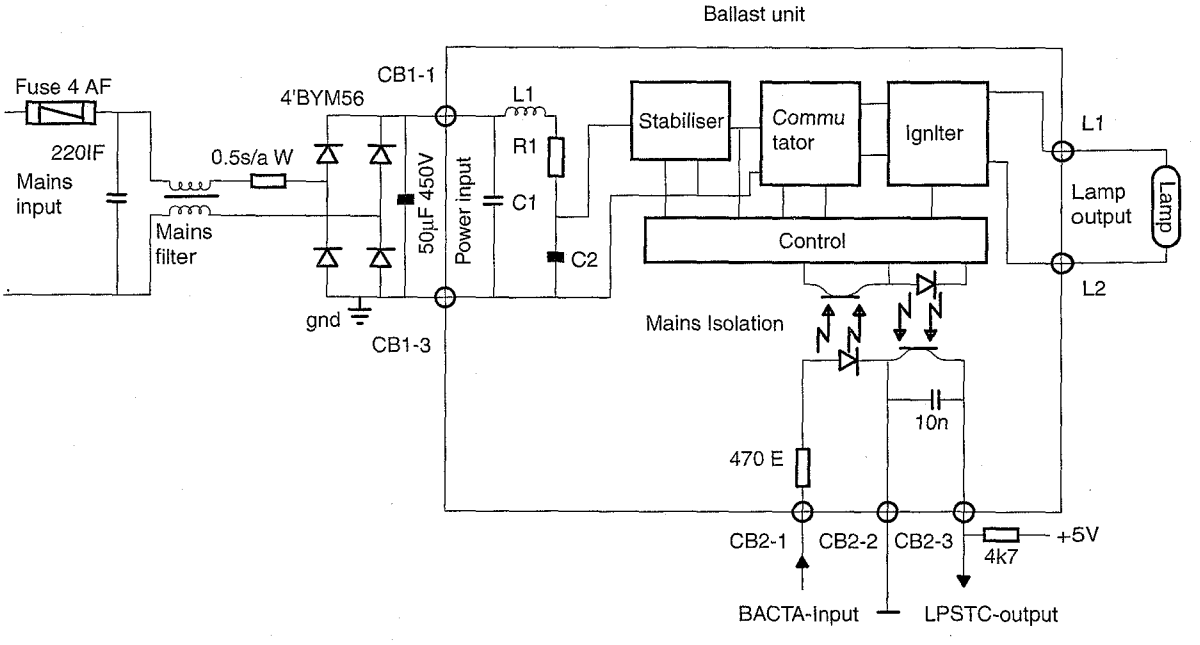


## 3.4 Ballast unit

This unit re-regulates the ballast DC power supplied from the power PWB ass'y and generates UHE lamp AC power supply.



### Circuit Diagram




### (1) Operation overview

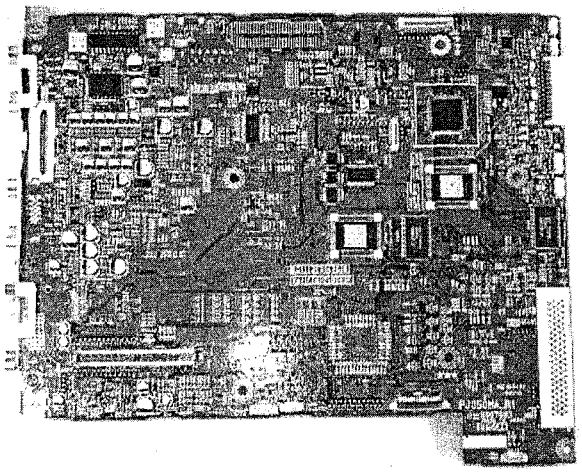
- Sub-power supply : Generates voltage for the control circuit within the ballast unit.
- Switching circuit : Performs switching operation for re-regulation based on the signals from the main PWB ass'y (BACTA signals turn the ballast output on and off). The circuit also changes the switching duty (output voltage adjustment) based on the feedback signals from the detection circuit.
- Regulator circuit : Generates voltage for the lamp.
- Detection circuit : Generates feedback signals for stable output voltage and detects the output current by monitoring the regulator circuit. When the lamp is off, the "LPSTC" signal is send to the main PWB ass'y.

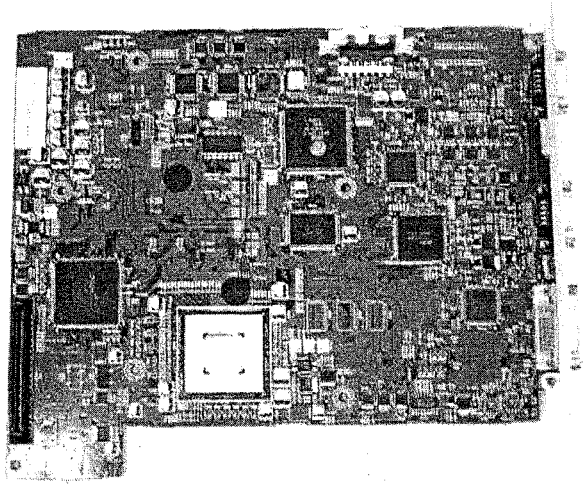
## 3.5 Main PWB ass'y

The main PWB ass'y is a PWB that acts as the nerve center of the product. The main PWB ass'y is structured with circuits, etc. including CPU, ROM (Flash ROM/EE-PROM), video memory, digital display controller, resizing and operation panel control/interface control/temperature sensor circuit/ballast power supply control/receptor PWB interface, etc. The main PWB ass'y has complete control with the exception of display signal generation and audio output. The service unit of this PWB is one unit.

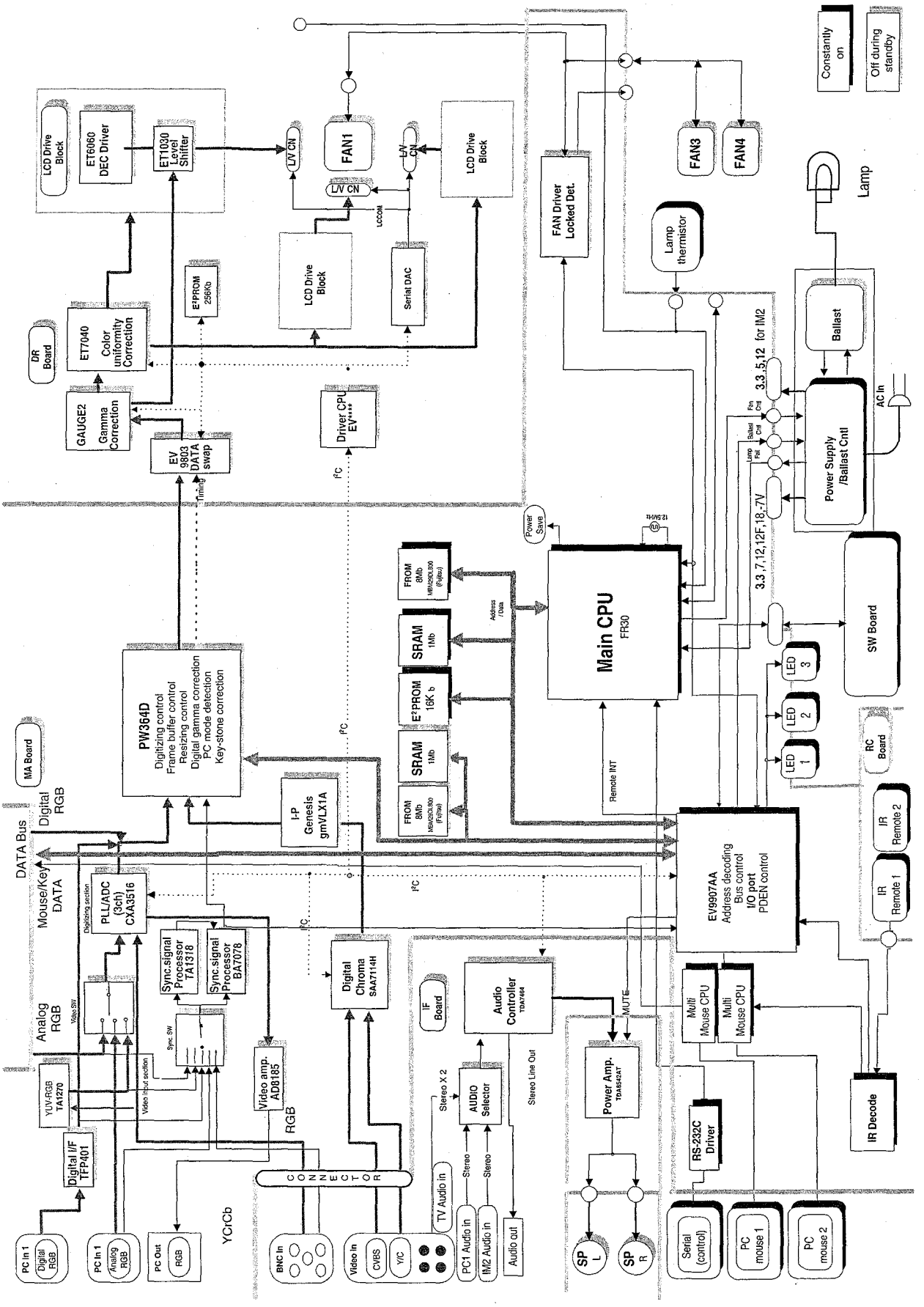
The main PWB ass'y is a part subject to be repaired at the factory. For factory repair, see 1.2 Factory repairs.

The exterior appearance of the main PWB ass'y is as follows.





## (1) Main PWB ass'y circuit block diagram



**(2) Operation overview**

- The reset signal for the I/O controller of the main PWB ass'y is canceled when the power is turned on, operation settings for each section is made according to the program stored in the Flash ROM, and the unit enters the standby mode (lamp unit on (projection) standby)).
- The Computer In input signal (digital) is first converted to analog signals in the video/amp circuit and is then replaced with digital signals at ADC.
- Output signals from Monitor Out are input signals from Computer 1 outputted via the video/amp circuit.
- For display, the received data is stored in the frame buffer of the resizing section and is resized. Resized data is outputted along with the sync signal to the driver PWB ass'y.
- Video input (S-Video/Video) signals are digitally converted by the digital chroma-processor and stored in the frame buffer.
- For the operation panel, the I/O controller outputs 4 scan signals and the signals appear in the return signal line via the switch contact point when a switch is pressed. The I/O controller controls the operation of each section based on the return signal.
  (Example: If the POWER switch is pressed, the I/O controller outputs the "BACTA" signal to the ballast unit (lamp power supply.)
- +5V is supplied to the receptor PWB ass'y and when the PWB detects the remote controller signal, serial data is received by the IR decoder and the I/O controller controls the operation of each section.
- The PWB is equipped with an EE-PROM circuit and timer circuit to manage the usage time of the light source lamp. The operations of the circuits are as shown below.

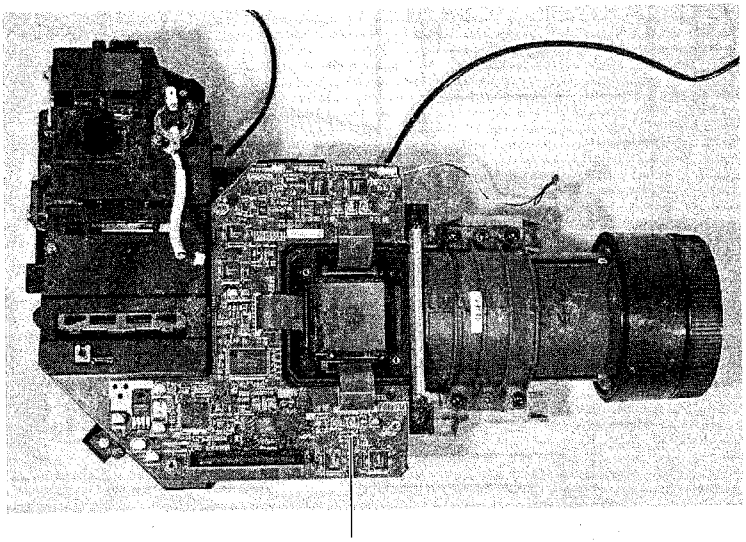
| Item | Lamp indicator | EE-PROM | Onscreen display/ check method |
|---|---|---|---|
| Lamp usage time | ———— | Saves lamp usage time | Check using the Information menu |
| When lamp is used | Flashes orange for about 1,400 hours | Lamp usage time is cleand by performing the "Resetting the lamp illumination time" operation. (Manual operation) | After the lamp is lit,"Lamp Replace projection lamp" message is displayed for about 30 seconds. |
| Lamp malfunction (damage, etc.) | Flashes red | | Check lamp inner housing |

- The thermistor circuit detects the temperature of the source lamp section. The CPU monitors the thermistor signals and controls the light source lamp and fan based on the temperature status.
- The Mouse interface is connected to a PC when using the remote controller as a wireless mouse.

## 3.6 Driver PWB ass'y

The driver PWB ass'y holds two functions of converting RGB signals from the main PWB ass'y to analog signals (LCD panel signals), and controlling the displayed images using electrically corrected data.
The driver PWB ass'y is a part of the optical engine and is not subject to maintenance.

The exterior appearance of the driver PWB ass'y is shown below.

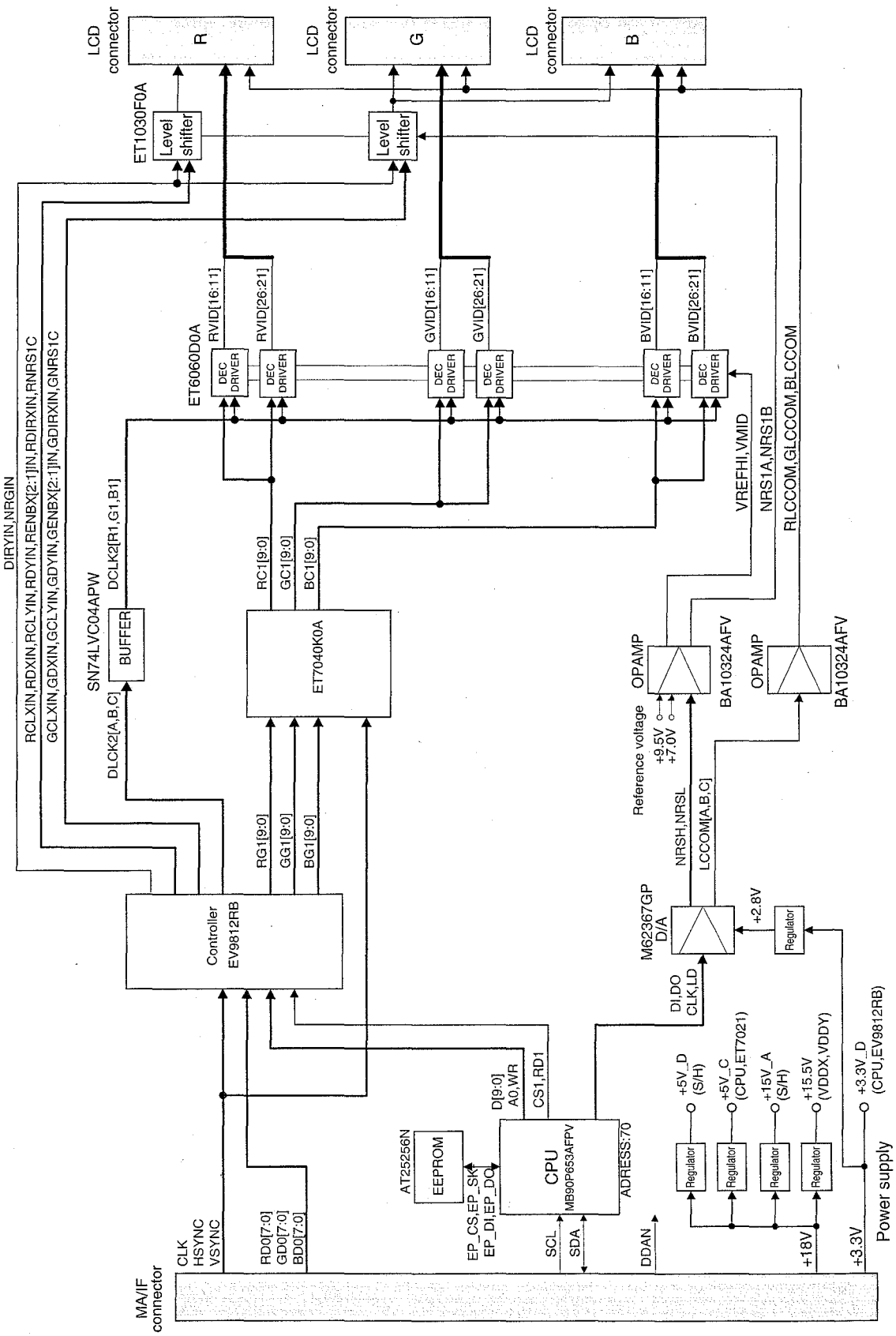


Driver PWB ass'y

**Notes:**

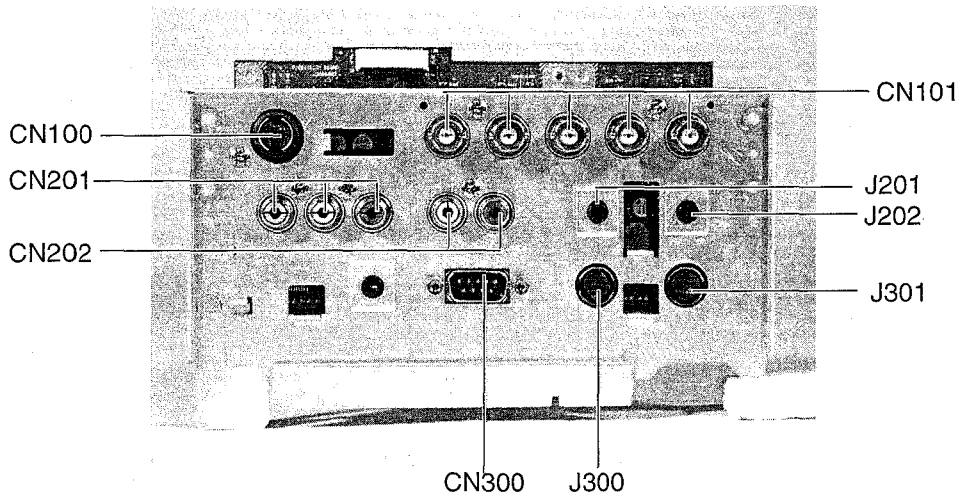
- **Each unit of the optical system including the LCD panel and projection lens and the driver PWB ass'y are a part of the optical engine. Never use only the driver PWB ass'y as a separate repair unit.**
- **When the driver PWB ass'y is need of repair, treat it as a repair of the optical engine.**
- **The optical engine is a part subject to be repaired at the factory. For factory repair, see 1.2 Factory repairs.**

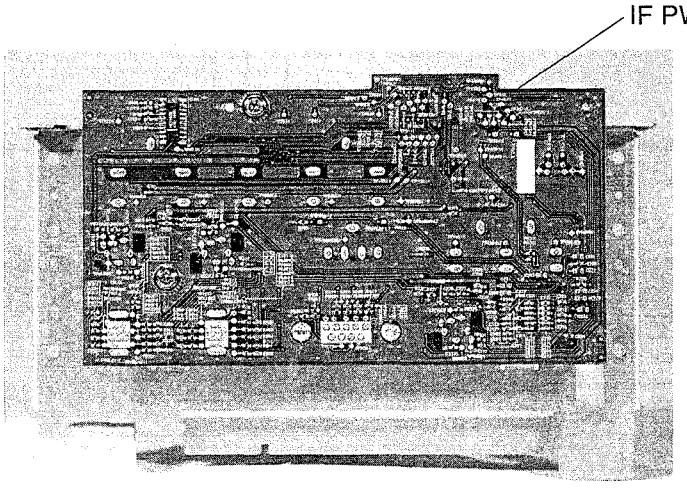
## Driver PWB ass'y circuit block diagram



## 3.7 IF PWB ass'y

There are 9 interface connectors and audio controllers. Audio signals are outputted to the main PWB ass'y after the input interface is selected using audio controller.

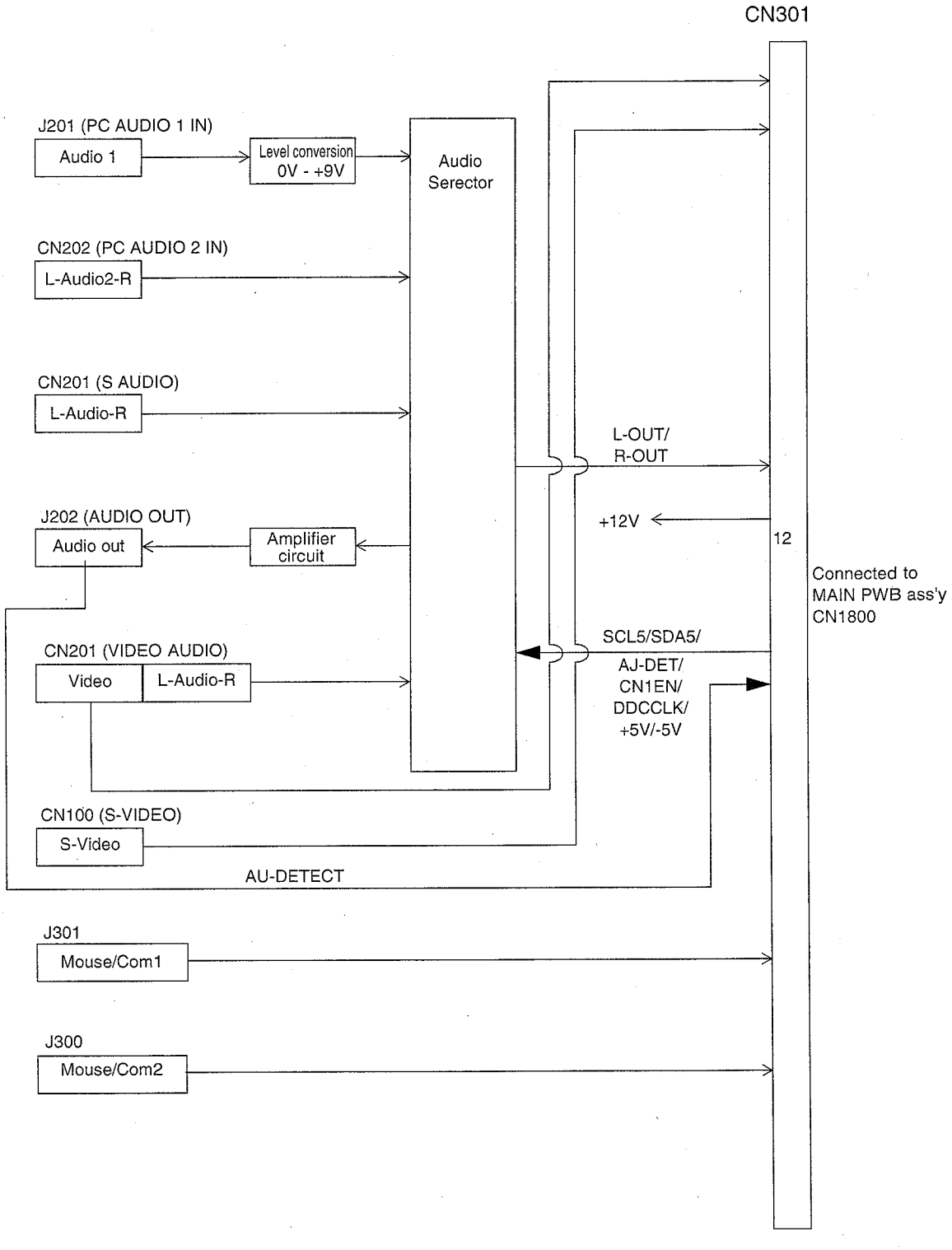



### (1) Audio controller functions

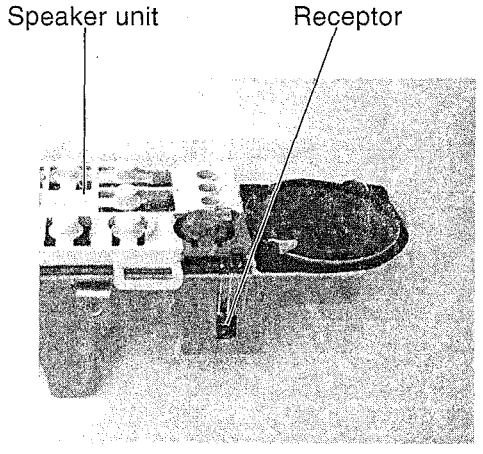
① Adjusts the input source, volume and audio quality.
② Sends signals for detecting jack insertion of Audio Out to the CPU of the main PWB ass'y.
③ Controls the amplifier mute (when Audio Out is inserted) of the audio amplifier. (Amplifier mute controls only the internal speakers. External speakers are not controlled.)
④ Audio mute is performed when the AV MUTE button is pressed.

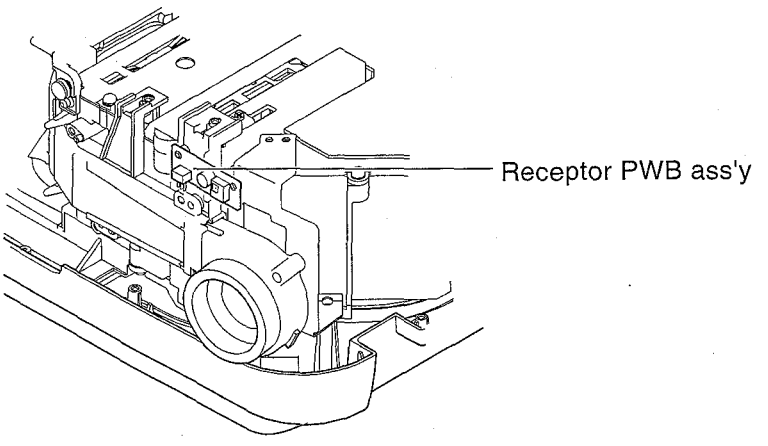
## (2)IF PWB ass'y circuit block diagram



## 3.8 Receptor PWB ass'y

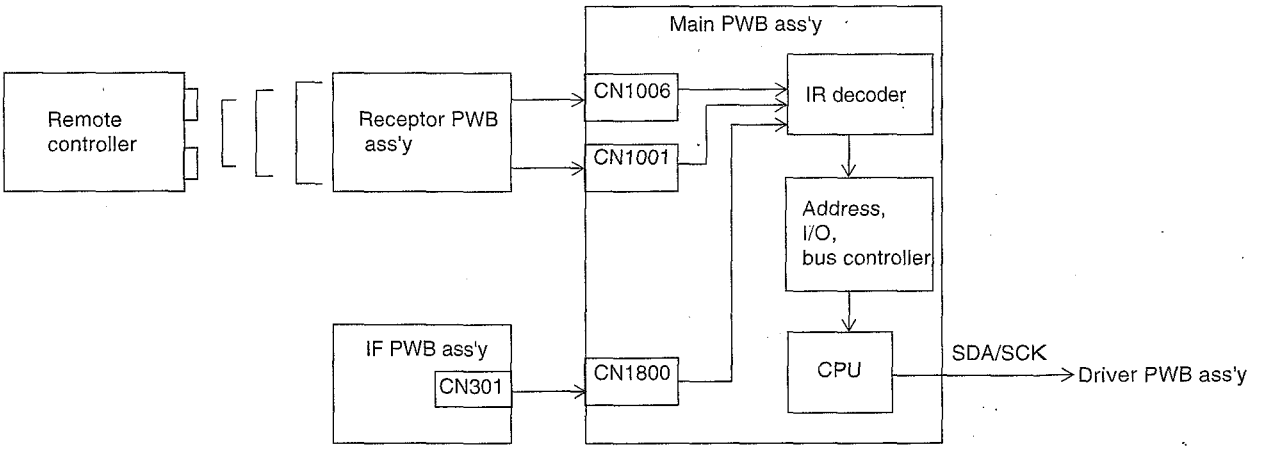
The receptor PWB ass'y is equipped with elements to detect (light reception) infrared signals from the remote controller. The remote controller light reception elements are mounted on speaker (front) and reinforcement duct (rear).



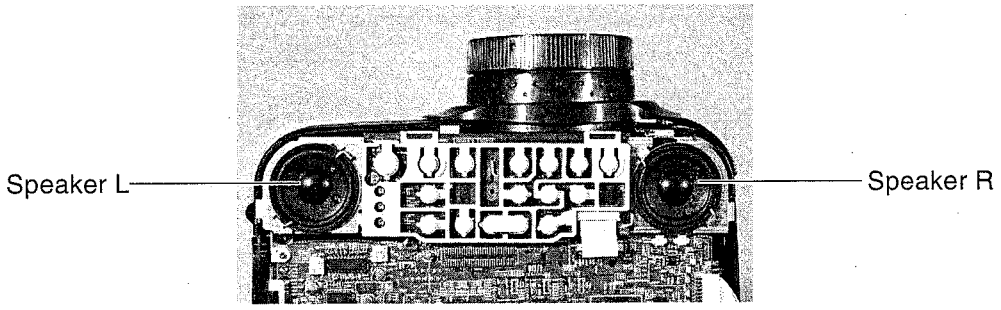

The signals of the receptor PWB ass'y are connected to the front (CN1006) and rear (CN1001) of the main PWB ass'y by cables, and converted to 16-bit parallel data by the IR decoder.

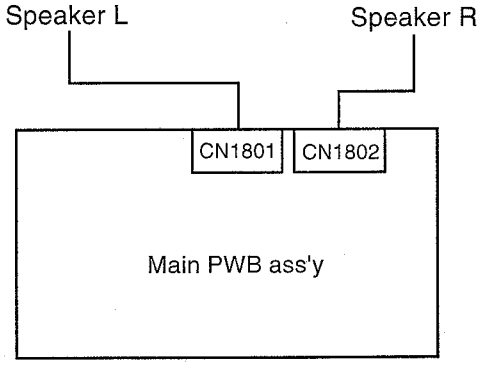
- The main PWB ass'y uses the received data (button switches and pointer of the remote controller) to turn on and off the power supply, run menus, etc.
- Signals supplied to the driver PWB ass'y via the main PWB ass'y control the display (pause, blank, etc.).
- Signals supplied to the IF PWB ass'y via the main PWB ass'y control the volume adjustment.



## 3.9 Speaker unit

The projector is equipped with two upward-facing 8 -3W speak ers to playback PC and AV device audio input in stereo. When external speakers are connected to the Audio Out jack on the side of the unit using an audio cable, no sound will be outputted to the built-in speakers.

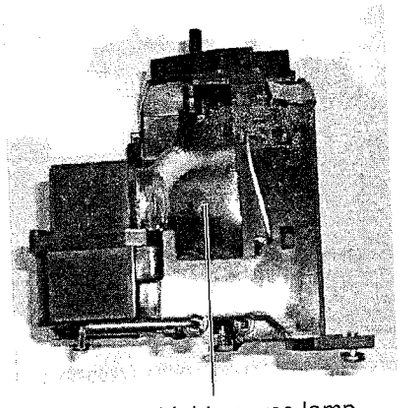



Audio input from a PC or audio device is amplified in the AU section of the main PWB ass'y before it is outputted to the speakers. The main PWB ass'y controls whether to output from the internal speakers or external speakers (Audio Out) by detecting the connection of external speakers (Audio Out).

## 3.10 Lamp inner housing (light source lamp)

The lamp inner housing is a unit built in with a light source lamp and connector for power supply connection, and is installed on the rear of the projector by 2 screws. The light source lamp is mounted inside the lamp inner housing and cannot be handled as a separate unit. For this reason, the entire the lamp inner housing must be replaced. The connector for power supply connection is for supplying power to the light source lamp from the ballast unit, and the lead wire is connected to the light source lamp.



Light source lamp

Connector for power supply connection

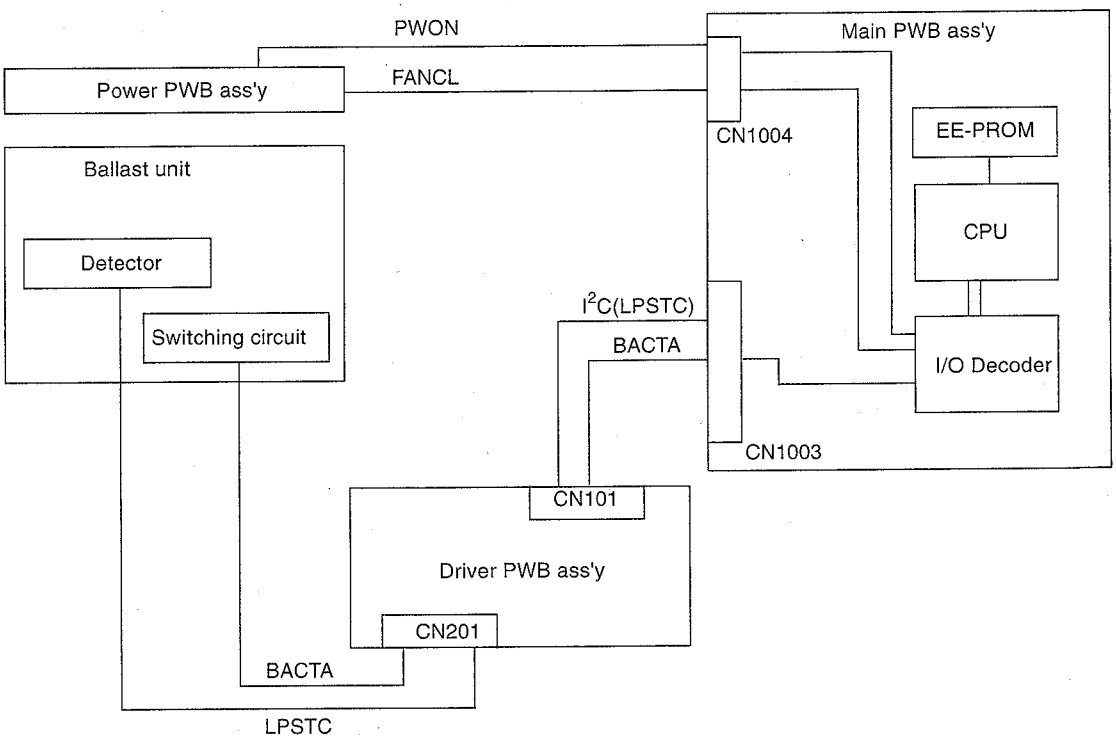
### (1) Light source lamp

The intensity of illumination for the light source lamp decreases with the hours of usage. This unit memorizes the usage hours of the light source lamp and gives a "replacement display" using the screen and lamp indicator as a guide to the replacement period of the lamp inner housing.

1) The lamp indicator flashes orange when the accumulated usage hours reach 1,400 hours.
   If the light source lamp is turned on after the accumulated usage hours reach 1,400 hours, a "Lamp Replace" message will appear on the screen for about 30 seconds.
   Although the light source lamp can be turned even after 1,400 hours of use, replace the lamp inner housing to maintain the original brightness and picture quality.
2) After installing a new lamp inner housing, always initialize the lamp usage hours according to "Resetting the lamp illumination time" of the User's Manual.

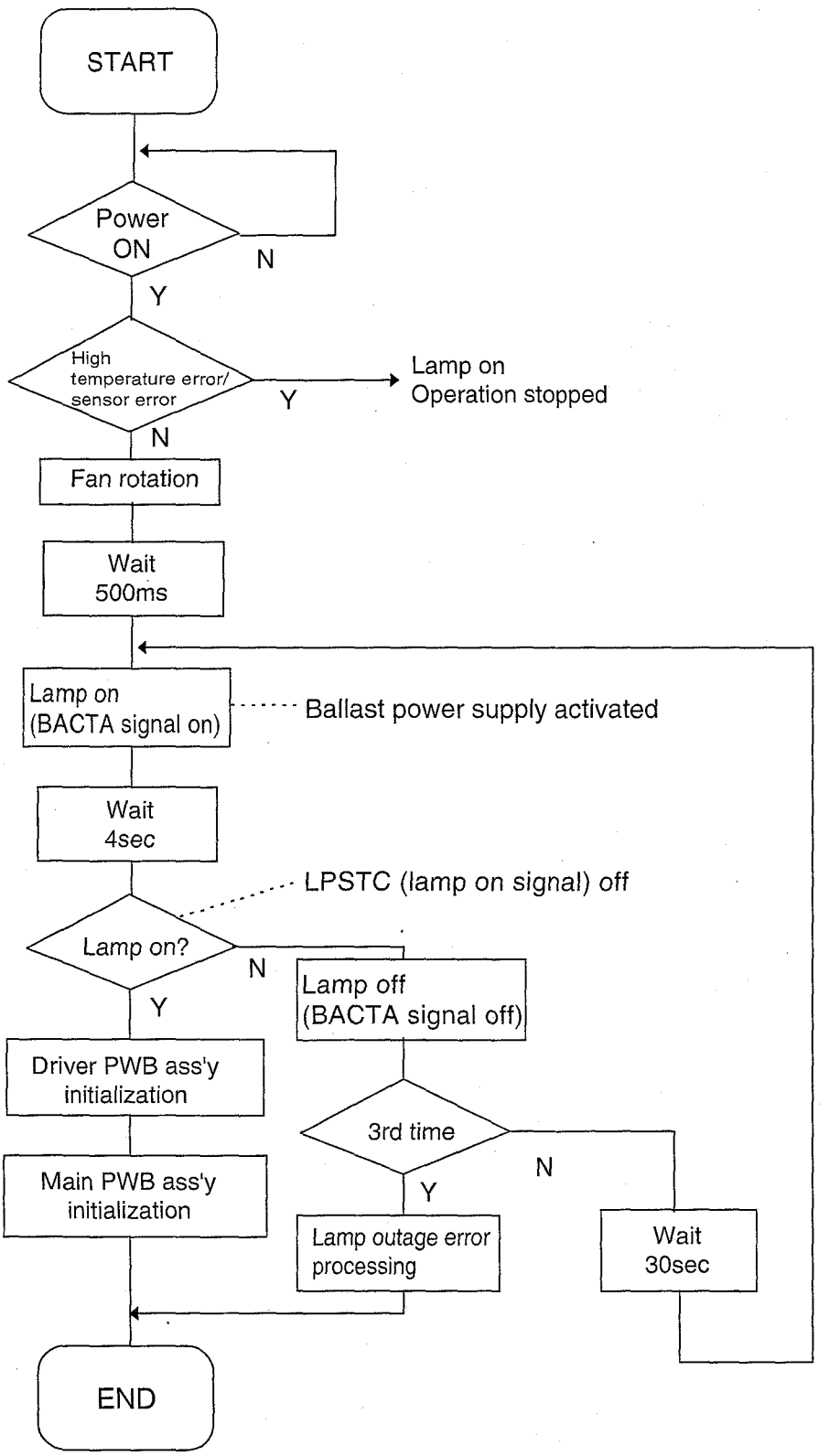
**Notes:**

- **The replacement display is only to be used a guide to the replacement period of the lamp inner housing. The display does not guarantee the service life of the lamp inner housing (light source lamp).**
- **Although the replacement display appears as a guide to the replacement period of the lamp inner housing, the light source lamp may stop lighting before the display appears depending on the individual characteristics, usage environment and usage conditions, etc. It is recommended that a replacement be prepared beforehand.**
- **Always replace with a new lamp inner housing when initializing the lamp usage hours. In addition, always initialize the lamp usage hours after replacing the lamp inner housing. Otherwise, damage may occur to the light source lamp or projector, or the lamp may not light.**



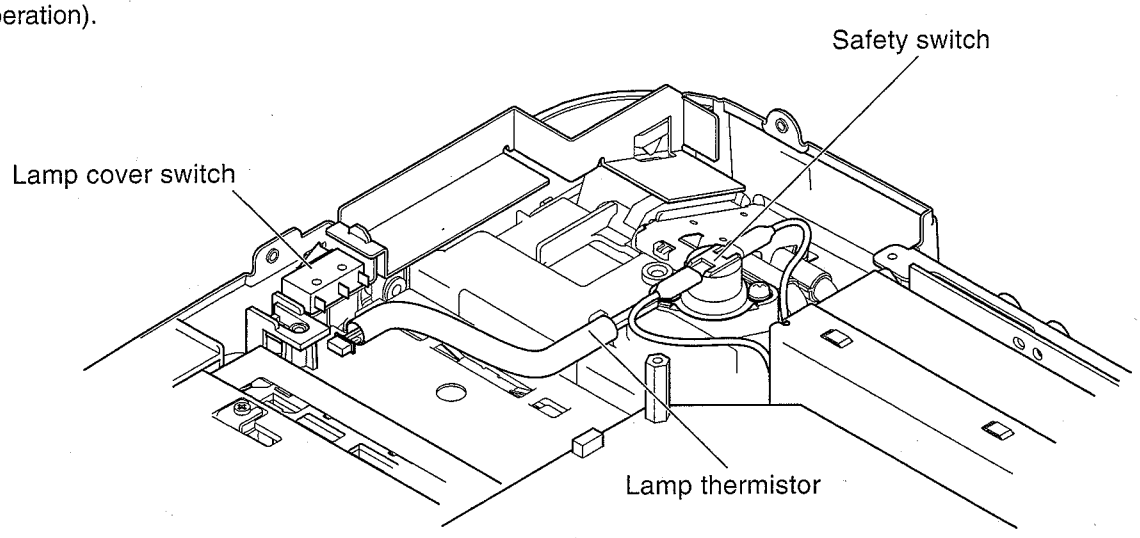

**Light source lamp control circuit**

**(2) Lamp indicator sequence flow**



## 3.11 Thermistor/switches

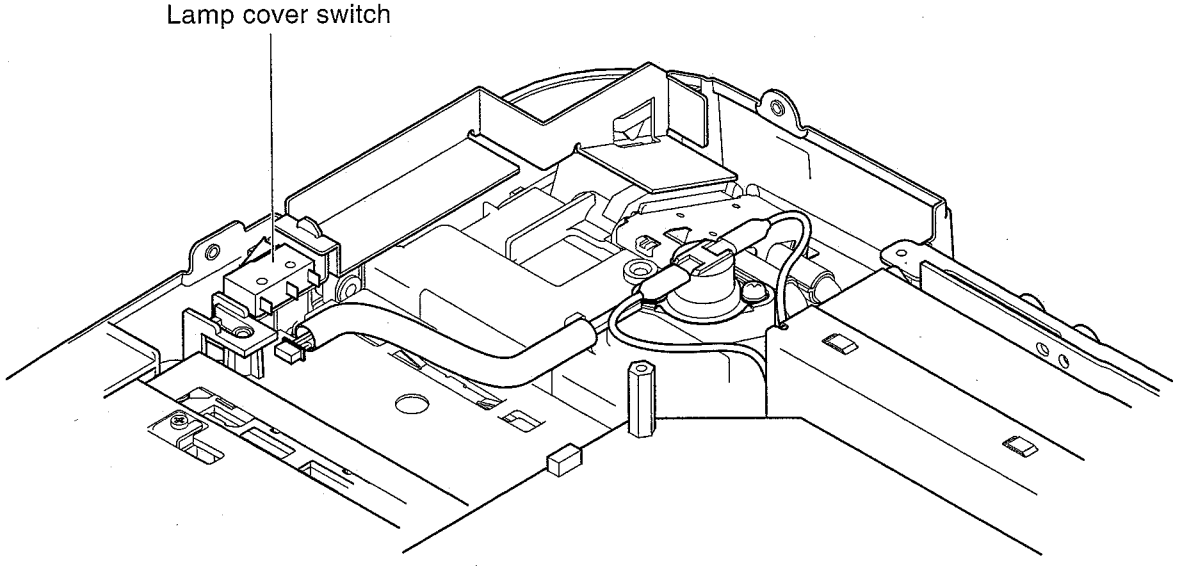
The projector is equipped with the following parts to maintain safety of the operator and unit (prevention of abnormal operation).




| Name | Installed location/type | Functions/applications |
|---|---|---|
| Lamp cover detection switch | Side cover reinforcement plate/ push switch | AC power supply is cut off when lamp cover opened<br>(Power cannot be turned on) |
| Safety switch | Lamp housing/thermal switch | Overheat prevention of light source lamp surroundings<br>AC power supply is cut off when a certain temperature is reached |
| Lamp thermistor | Lamp housing/thermistor | Overheat prevention of light source lamp surroundings<br>Lamp is turned off when a certain temperature is reached |

### (1) Lamp cover switch

The lamp cover switch turns off when the lamp cover is removed.



**(2) Safety switch**

Overheat protection switch installed on top of the lamp inner housing. If excessive heating should occur due to dirty exhaust fan, etc., the light source lamp is normally turned off by the lamp thermistor described on the next item to prevent overheating.

The safety switch is connected with a cable attached with a fastening tab from the power PWB ass'y. When the unit reaches a certain temperature, the AC power supply is cut off and the regulation operation is stopped. Once the safety switch is activated, the power supply cannot be turned on until the temperature falls to a certain value.

When this switch operates, a malfunction of the temperature detection circuit of the lamp thermistor or the main PWB ass'y can also be considered.

**(3) Thermistor and temperature sensor operations**

The main PWB ass'y detects the temperature (resistance value) of the lamp thermistor. Each fan is controlled and its power is shut down by the main PWB ass'y based on the measurement results. The temperature results are displayed using the temperature indicator as shown in the table below.

| Status | Temperature indicator | Definition |
|---|---|---|
| Normal temperature | Off | Unit is operating normally |
| Warning temperature | Flashing orange | The lamp will turn off if the temperature rises any further |
| Abnormal temperature | Red light | Overheat state<br>Lamp off, cool down |
| Temperature detection circuit error | Flashing red | Fan, thermistor and/or temperature detection circuit error |

During abnormal temperature (or temperature detection circuit error), the main PWB ass'y performs a series of operations. The PWB first turns off the lamp, operates each fan at high speed, and lights (or flashes) the temperature indicator red. At this time, the temperature of the unit will decrease from the cool down operation, the fans will not automatically stop and the temperature indicator will remain on or flashing in red.

The time necessary for cool down depends on the outside temperature, etc. Allow the unit to sufficiently cool off before removing the power cable from the unit. The lamp cannot be turned on until the temperature of the unit decreases.

If the lamp is turned off due to abnormal temperature, the following can be considered.

1) Problem in the usage environment

- Is the unit used within the usage temperature range (+5˚C - ±40˚C)?
- Is the unit being used in a place with much tobacco smoke, lampblack or dust?
- Is the unit being directly exposed to an air conditioner?
  (The unit interior will not cool since the intake and exhaust fans of the unit are obstructed by the airflow from the air conditioner.)
- Is the intake port or exhaust port blocked?

2) Problem with usage method or maintenance

- Is the air filter or lamp intake port dirty?
- After the lamp turns off, is the unit cooled off until the operation indicator lights orange?

3) Problem with the unit

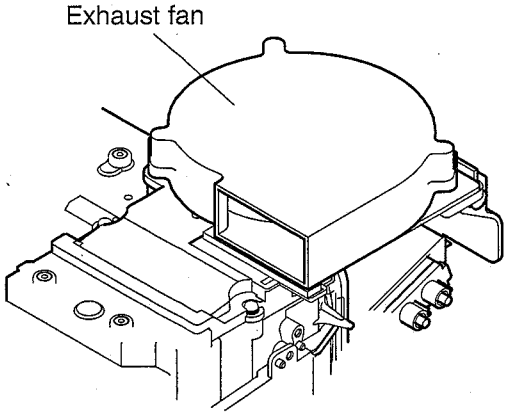
- Dirty or defective intake fan or exhaust fan.

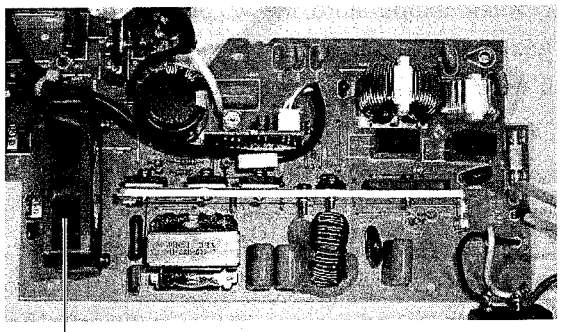
**Note:**

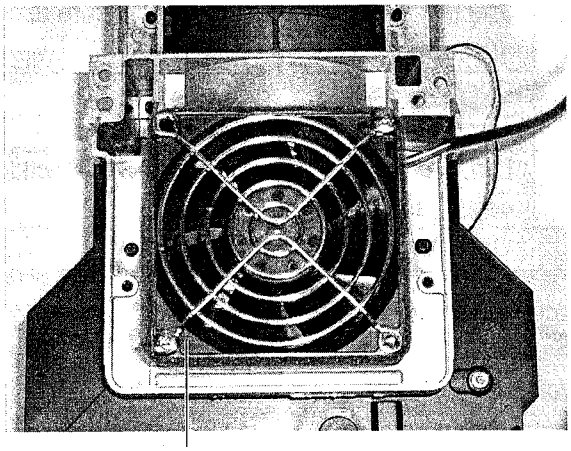
**If warning temperature or abnormal temperature occurs due to the usage method or usage environment, improve the usage method or condition as early as possible. Otherwise the unit may malfunction as a result.**

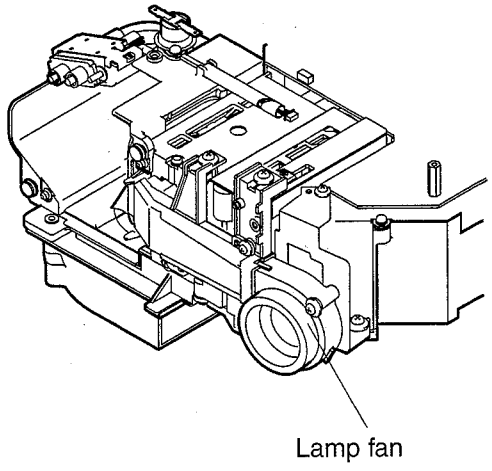
## 3.12 Fan

There are 4 fans within the unit. These fans discharge heated air to prevent circuit operation errors and damage caused by heat. (Mainly, heat is generated by the light source lamp, power PWB ass'y and ballast unit, causing the surrounding temperatures to rise as well.)

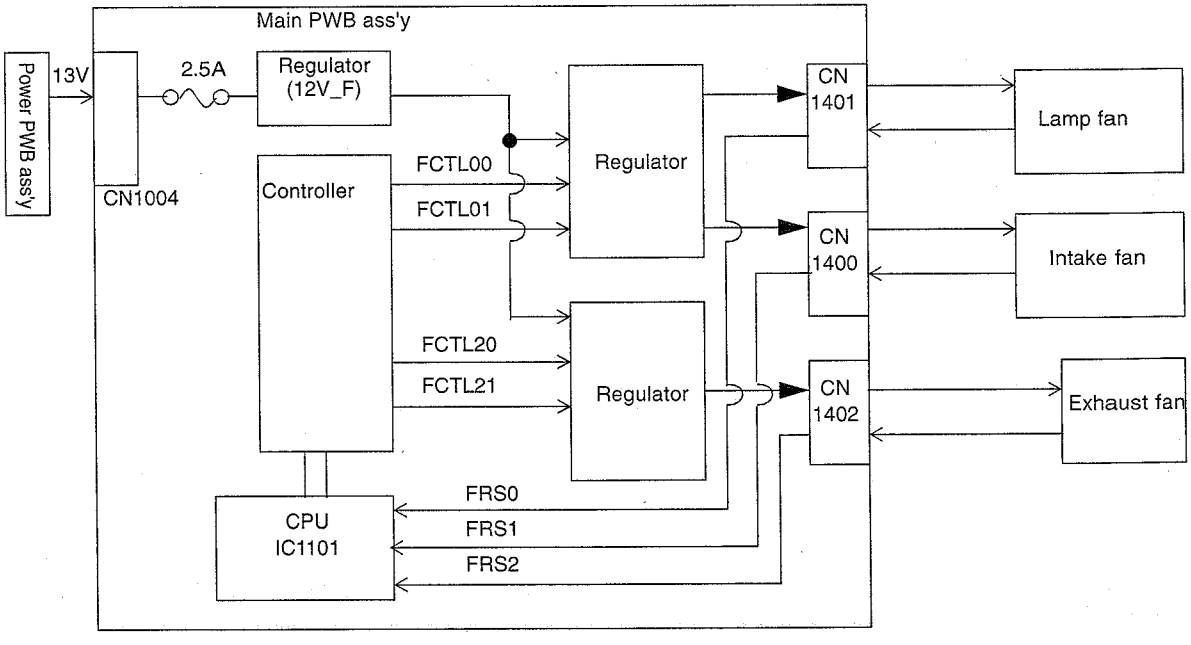



### (1) Fan control circuit block diagram



**(2) Operation controls**

- All fans are connected with 3 lead wires. One of these wires is a signal line to detect whether the fan is rotating and to give feedback.
- The signal outputted from the controller port of the main PWB ass'y is used to change the output of the driver circuit (structured by a regulator and transistor circuit) on the main PWB ass'y to control the intake and exhaust fans. (The intake fan is controlled in 3 stages: Off, Low and High. The exhaust fan is controlled in 5 stages: Off, Low, Med-low, Med-high and High.)
- The fans on the power PWB ass'y are operated by the +12V power generated by the PWB itself.
- Feedback signals from the fans are constantly used by the CPU to monitor whether fans are operating normally (on or off). If in the case the CPU detects an abnormality in the feedback signal, the lamp is immediately turned off as a fan error and the temperature indicator is flashed red.

**(3) Fan operations**

(During standby)

When the thermistor reaches the Low setting value, the fan power supply is turned on and the intake and exhaust side fans are operated in Low.

When the thermistor falls below the Low setting value, the intake and exhaust fans are turned off.

(When lamp is on)

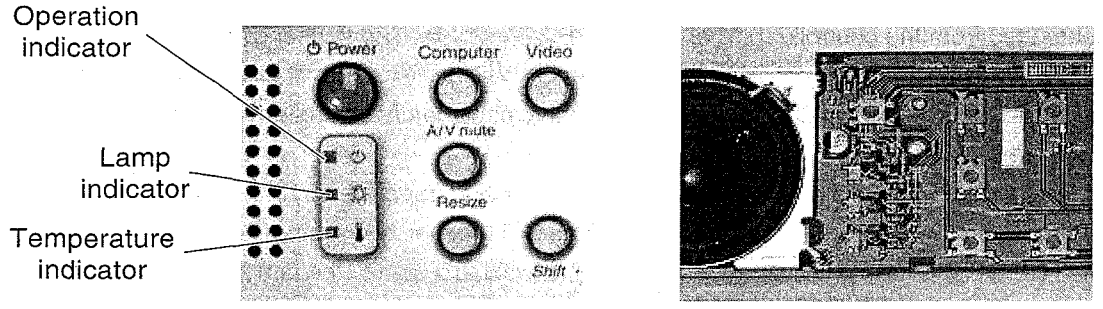
The intake and exhaust side fans are operated in Low about 0.5 seconds before the lamp is turned on. Then, the unit is operated based on the thermistor.

(During cool down)

After the lamp turns off, the thermistor operates the fans in High until the unit reaches the Low setting value.

## 3.13 LED indicators

There are 3 LED indicators on the operation panel to indicate the projector operating status.




Each indicator status and definition is shown in the table below.

| Operation indicator | | Lamp indicator | | Temperature indicator | | Definition |
|---|---|---|---|---|---|---|
| Orange | | Orange | | Orange | | |
| Green | Red | Green | Red | Green | Red | |
| ON | ON | OFF | OFF | OFF | OFF | Standby mode |
| Flashing 1 | OFF | OFF | OFF | OFF | OFF | Lamp warm-up state |
| ON | OFF | OFF | OFF | OFF | OFF | Lamp on |
| Flashing 1 | Flashing 1 | OFF | OFF | OFF | OFF | Cool-down mode |
| OFF | Flashing 1 | OFF | OFF | OFF | Flashing 1 | Bus error (internal error) |
| ON | OFF | Flashing 1 | Flashing 1 | OFF | OFF | Lamp replacement display (during lamp on) |
| Flashing 1 | OFF | Flashing 1 | Flashing 1 | OFF | OFF | Lamp replacement display (during warm-up) |
| Flashing 1 | Flashing 1 | Flashing 1 | Flashing 1 | OFF | OFF | Lamp replacement display (cool-down mode) |
| ON | OFF | Flashing 1 | Flashing 1 | Flashing 1 | Flashing 1 | Lamp replacement display & high temp. operation state (during lamp on) |
| Flashing 1 | OFF | Flashing 1 | Flashing 1 | Flashing 1 | Flashing 1 | Lamp replacement display & high temp. operation state (during warm-up) |
| Flashing 1 | Flashing 1 | Flashing 1 | Flashing 1 | Flashing 1 | Flashing 1 | Lamp replacement display & high temp. operation state (cool-down mode) |
| OFF | OFF | OFF | Flashing 1 | OFF | OFF | Lamp error or lamp power supply error |
| ON | OFF | OFF | OFF | Flashing 1 | Flashing 1 | High temp operation state (during lamp on) |
| Flashing 1 | OFF | OFF | OFF | Flashing 1 | Flashing 1 | High temp operation state (during warm-up) |
| Flashing 1 | Flashing 1 | OFF | OFF | Flashing 1 | Flashing 1 | High temp operation state (cool-down mode) |
| OFF | OFF | OFF | OFF | OFF | ON | High temp operation state |
| OFF | OFF | OFF | OFF | OFF | Flashing 1 | Fan error |
| OFF | OFF | OFF | OFF | OFF | Flashing 2 | Thermistor error |

*Indicator lights orange when both green and red lights are on.

Flashing 1: 1 sec interval = 50%  Flashing 2: 2 sec interval = 50%

# 4. Cleaning the LCD panel area

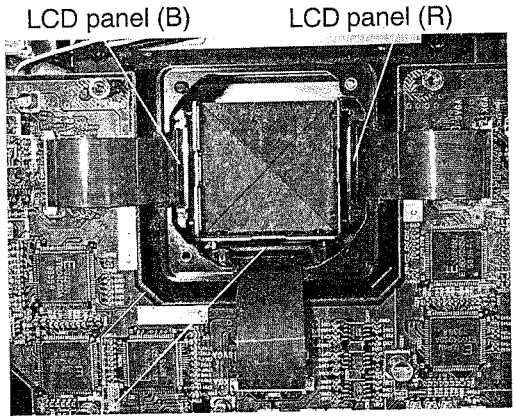
The LCD panels used on the projector are attached with cover glass. For this reason, small amounts of dust on the LCD panels will have very little influence on the video quality. However, cleaning of the LCD panel area is necessary when dust that has influence on the video quality is confirmed.

**(1) Checking method**

Project the video (100% white is desirable), and then adjust the focus so that the pixels of the LCD panels can be recognized. At this time, remove the dust that has influence on the video quality.

When projecting a signal of 100% white to check for dust, the LCD panel adhered with dust can be pinpointed as shown below. (In some cases, pinpointing which panel can be difficult depending on the size of the dust. In this case, clean all RGB LCD panels.)

- If dust is adhered on the R LCD panel, the shadow of the dust will be in the color of cyan.
- If dust is adhered on the G LCD panel, the shadow of the dust will be in the color of magenta.
- If dust is adhered on the B LCD panel, the shadow of the dust will be in the color of yellow.




**(2) Cleaning method**

① Turn off the light source lamp, then allow the unit to cool off sufficiently.
② Remove the optical engine from the bottom chassis. For the disassembly method, see 7. Disassembly and Reassembly.
③ Check for dust on the optical engine and if necessary, clean with a vacuum cleaner, etc.
④ Remove the intake fan and air filter from the optical engine.
⑤ Blow off dust on the LCD panels using an air blower.
⑥ Check for dust on the intake fan, air filter and bottom chassis and if necessary, clean with a vacuum cleaner, etc.
⑦ Reassemble the unit.

**Notes:**

- **Do not use alcohol or solvents for cleaning.**
- **Spots (missing pixels and bright dots) may be noticed on the LCD panel. However, this is the characteristic of LCD and is not a malfunction. Check the projected image carefully to distinguish with actual dust.**
- **Factory repair is necessary for optical engines that are heavily dirty. Disassembly cleaning of the optical engine cannot be performed on the field. For factory repair, see 1.2 Factory repairs.**

## 5. Pinpointing a defective LCD panel

The LCD panels used on the projector are the "normally white" type that allows the light from the light source lamp to pass through when there is no drive signal input. Use the following as reference to pinpoint defective LCD panels.

**(1) When viewing an all-white (100% white) screen:**

- If the R LCD panel is defective, the defective portion will be in the color of cyan.
- If the G LCD panel is defective, the defective portion will be in the color of magenta.
- If the B LCD panel is defective, the defective portion will be in the color of yellow.

**(2) When viewing an all-black screen:**

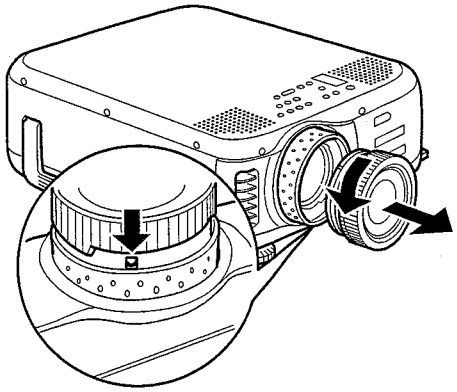
- If the R LCD panel is defective, the defective portion will be in the color of red (R).
- If the G LCD panel is defective, the defective portion will be in the color of green (G).
- If the B LCD panel is defective, the defective portion will be in the color of blue (B).

# 6. Replacing the attachment lens

### (1) Removing the attachment lens

Press the lever on the attachment lens and turn in the direction of the arrow.

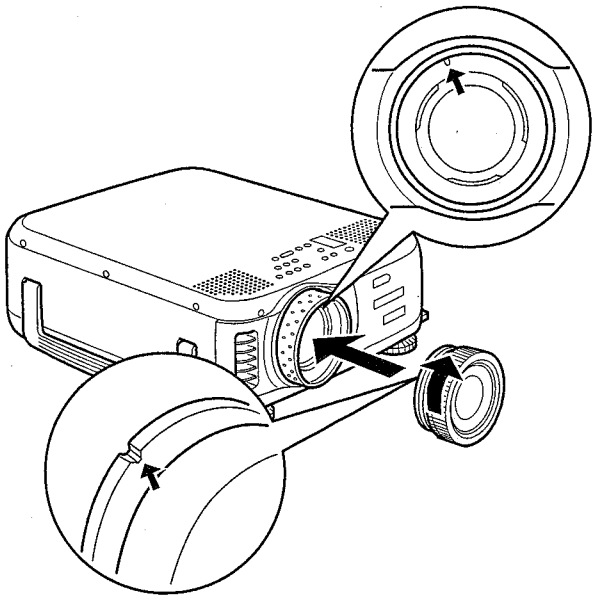
When the lens is turned fully, pull the lens out. At this time, turn the lens sideways for easier removal.



### (2) Remounting the attachment lens

Align the crena on the attachment lens with the crena on the lens case.

Turn the lens in the direction of the arrow until it stops.



# 7. Disassembly and Reassembly

This section will explain the disassembly procedure for the projector. Unless specified otherwise, follow the steps in reverse to reassemble parts.

## 7.1 Preparation

① Remove all metals that may come into contact with the unit.
② Wear protective gloves.
③ Wear wristbands for grounding.
④ Remove the power supply cable from the AC outlet.
⑤ Remove connected interface cables.
⑥ Remove any dirt around the fan using a vacuum cleaner, etc.

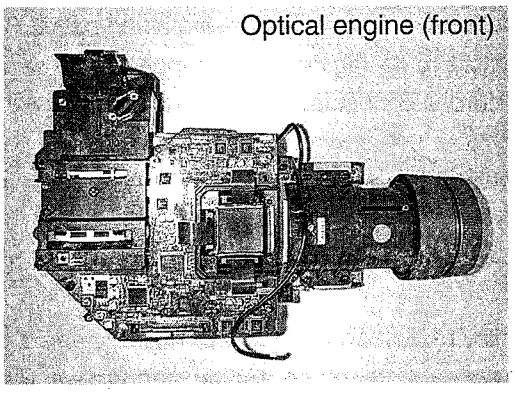
## 7.2 Tools and equipment

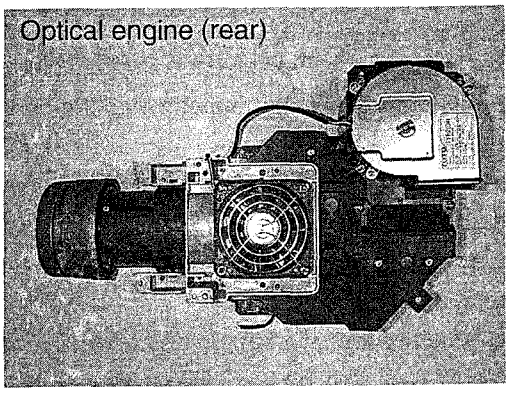
Prepare the following tools and equipment before disassembling.

| Name | Quantity | Purpose/Others |
|---|---|---|
| Philips screwdriver (20cm) | 1 | Disassembly of main unit outer case and internal parts |
| Slotted screwdriver (15cm) | 1 | Removal of front cover and lamp power supply connector |
| Philips screwdriver (No. 0) | 1 | Disassembly of zoom ring and focus ring |
| 5mm nut driver | 1 | Removal of nuts |
| 5.5mm nut driver | 1 | Removal of nuts |
| Tweezers | 1 | Removal of FPC cable |
| Brush or ink brush | 1 | Removal of dust |
| Vacuum cleaner | 1 | Removal of dust |
| Cleaning paper | As necessary | Cleaning projection lens, etc. |
| Air blower | 1 | Cleaning the LCD panel and around the fan |
| Protective gloves | 1 | |
| Wristbands | 1 | |

## 7.3 Handling the optical engine

The optical engine is considered on repair unit. Perform work in unit of optical engine when ordering maintenance parts and during factory repair.




**Notes:**

**Do not move the adjustment screws on the optical engine or disassemble parts not described in 7. Disassembly and Reassembly since the lens or mirror positioning will shift, resulting in unclear images. Shifted lens or mirror position requires precise adjustment at the factory.**

**Because the optical engine requires precise adjustments, field adjustments and disassembly cannot be made.**

## 7.4 Cautionary items concerning repairs

Follow the items below when performing repairs. Failure to follow will not only result in not being able to guarantee quality, but may result in the part not being able to be accepted for factory repair.

① Do not loosen the adjustment screws on the optical engine or disassemble parts not described in 7. Disassembly and Reassembly.

② If a unit of the optical system or the driver PWB ass'y is defective, replace or repair in optical engine unit. Also make shipments for factory repair in optical engine unit.

③ Each unit of the optical system and the driver PWB ass'y is a set of the optical engine. Never recompose individual units (ie: using only the driver PWB ass'y in another projector for repair).

④ When shipping parts for repair (optical engine or main PWB ass'y), pack using the method described in 2. Packing Methods

## 7.5 Cautionary items concerning disassembly and reassembly

Be sure to read and follow the items described in Important Safety Precautions at the beginning of the service manual before performing disassembly or reassembly. Also refer to the detailed cautionary notes found in each section before performing the respective operation. The following are general cautionary items.

① Be sure to remove the power supply cord from the AC outlet before removing or re-installing parts. Furthermore, wait until the intake and exhaust fans turn off automatically before removing the power supply cord. The fan mounted on the power supply unit operates when the power supply cord is connected to the AC outlet and will not turn off automatically.

② Clamps, etc., are used to keep the internal wiring away from high-temperature parts and high-voltage parts. These should always be returned to the original condition.

③ When removing the top cover, use caution to prevent the entry of foreign mater and always work in a dust-free environment.

④ During the disassembly of the projector, there is the possibility of dust adhered to internal fans and around the air filter to shift, and dirtying the LCD panel area, which is the nerve center of the display mechanism, resulting in an adverse influence on the display quality. Check for dirt before starting reassembly and if necessary, clean using a vacuum cleaner, etc.

⑤ Optical parts such as the lens and mirror are exposed from the optical engine. Take caution as to not scratch or dirty the optical parts. If optical parts become dirty, wipe using a cleaning paper, etc. At this time, do not use solvents such as alcohol or liquid cleaners as these will damage the coated layer.

⑥ The optical engine and PWB assemblies are vulnerable to static electricity. When removing the optical engine or PWB ass'y, store the part in an antistatic bag, etc.

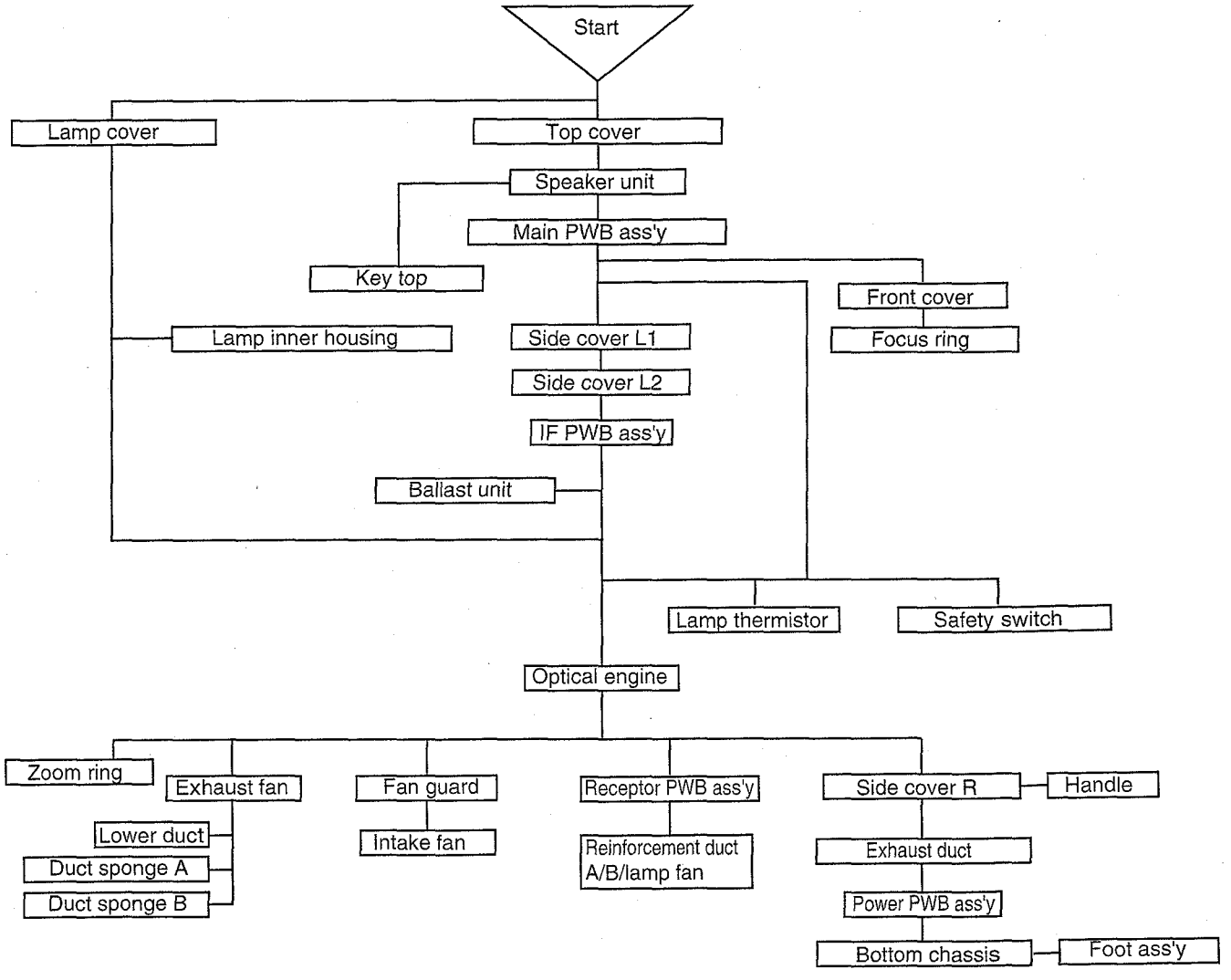
⑦ The optical engine is extremely vulnerable to vibration and shock. Handle with care to prevent any possible damage to the optical engine.

⑧ Take caution as to not damage the wires when connecting/disconnecting a connector.

⑨ When a part is determined defective and is subject for repair at the factory, ship only the part subject for repair using the predetermined method. For the shipping method, see 2. Packing Methods.

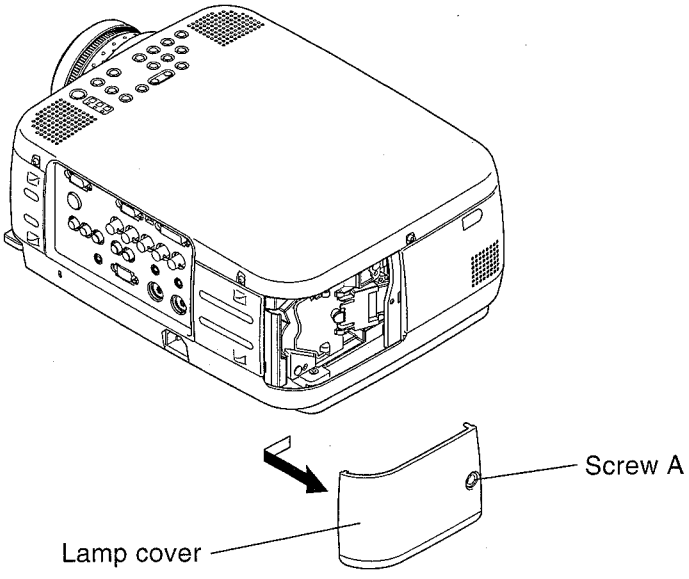
## 7.6 Disassembly flowchart

The following is a flowchart describing the disassembly method. Unless specified otherwise, the parts can be reassembled by following the steps in reverse. Detailed explanation on the reassembly is therefore omitted. Details concerning disassembly methods are described from 7.7 to 7.24 by unit.



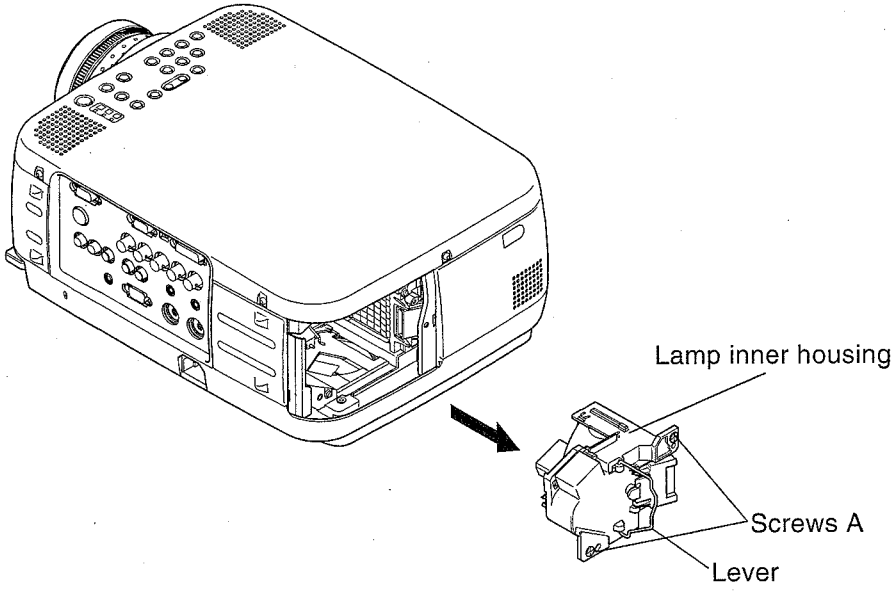
## 7.7 Lamp cover

1. Loosen screw A (1 unit), and remove the lamp cover from the rear of the unit.




## 7.8 Lamp inner housing

1. Loosen screws A (2 units).
2. Remove by holding the lever.

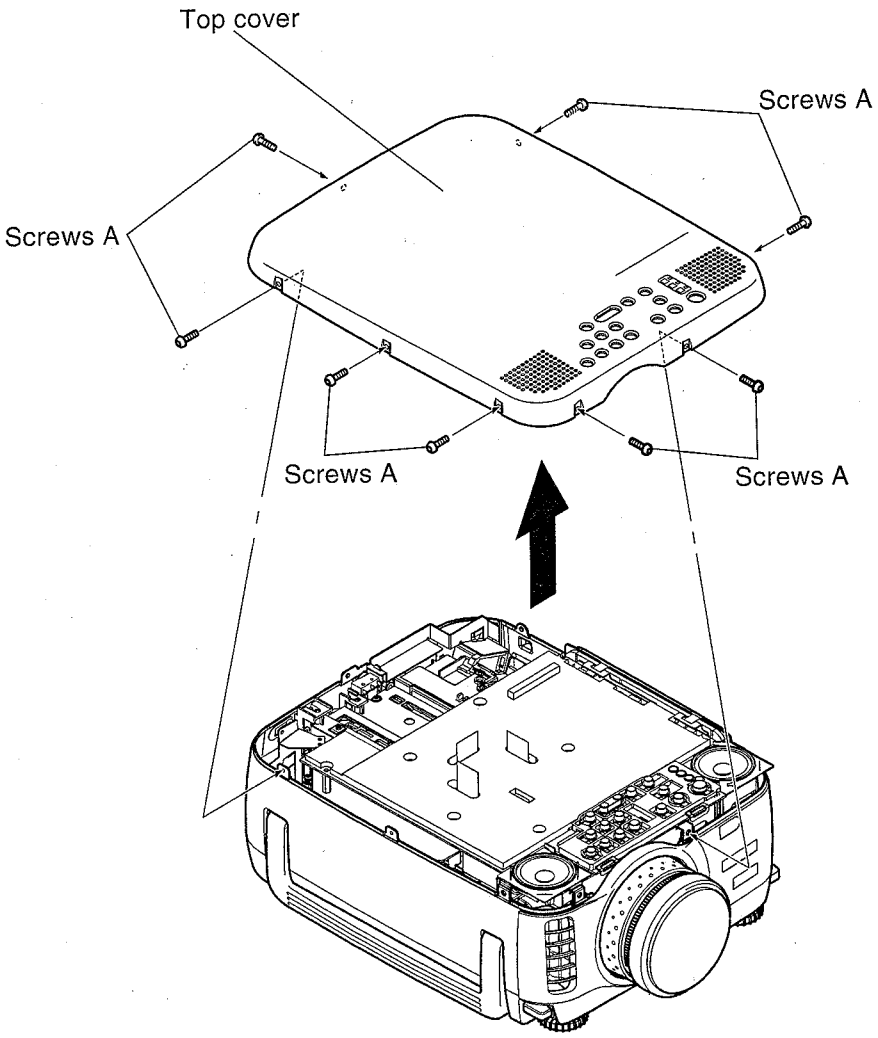



**Notes:**

- **The lamp inner housing is extremely hot immediately after the projector has been used. Take caution when handling.**
- **When remounting, do not touch the glass surface of the lamp with bare hands, or dirty the glass.**

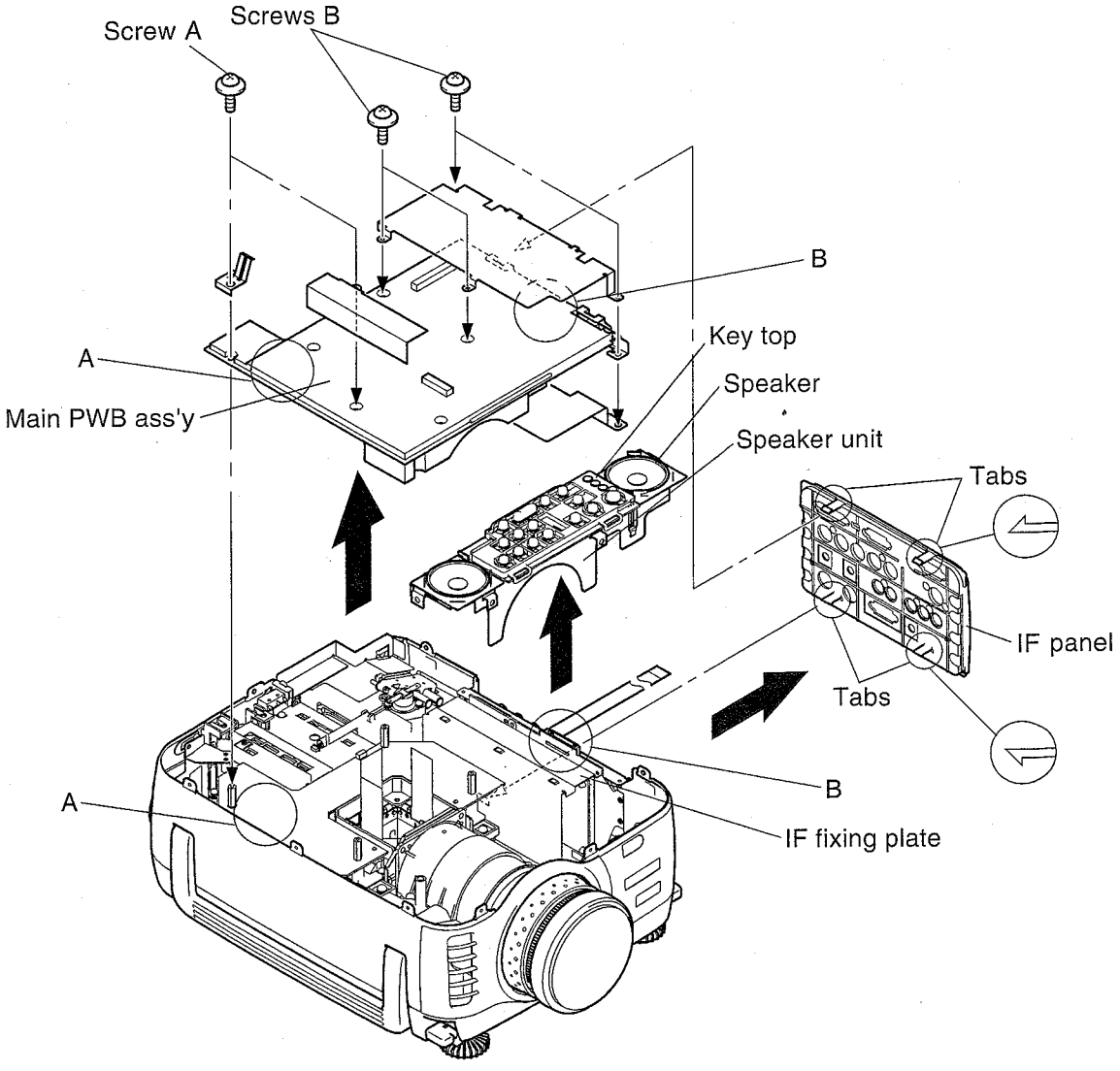
## 7.9 Top cover

1. Remove screws A (8 units) and open the top cover in the direction of the arrow.



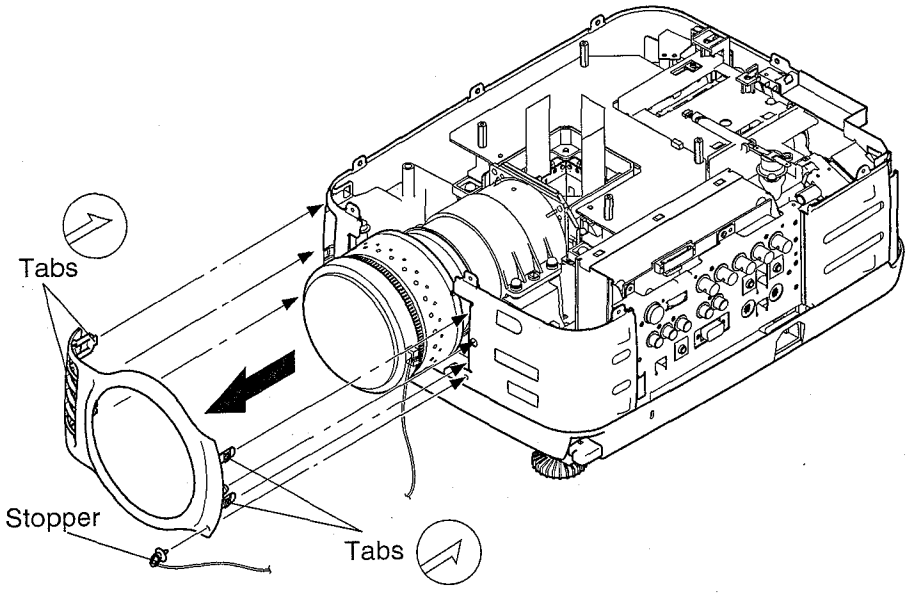
## 7.10 Main PWB ass'y/speaker unit

1. Remove screws A (2 units).
2. Remove the connection cables from the speaker unit and main PWB ass'y
3. Remove the speaker unit from the main unit.
4. Remove the 4 tabs on the IF panel from the IF fixing plate.
5. Remove screws B (4 units).
6. Remove all connected cables from the main PWB ass'y.
7. Slightly lift the main PWB ass'y in the direction of the arrow and remove connector sections A and B.
8. Remove the main PWB ass'y.



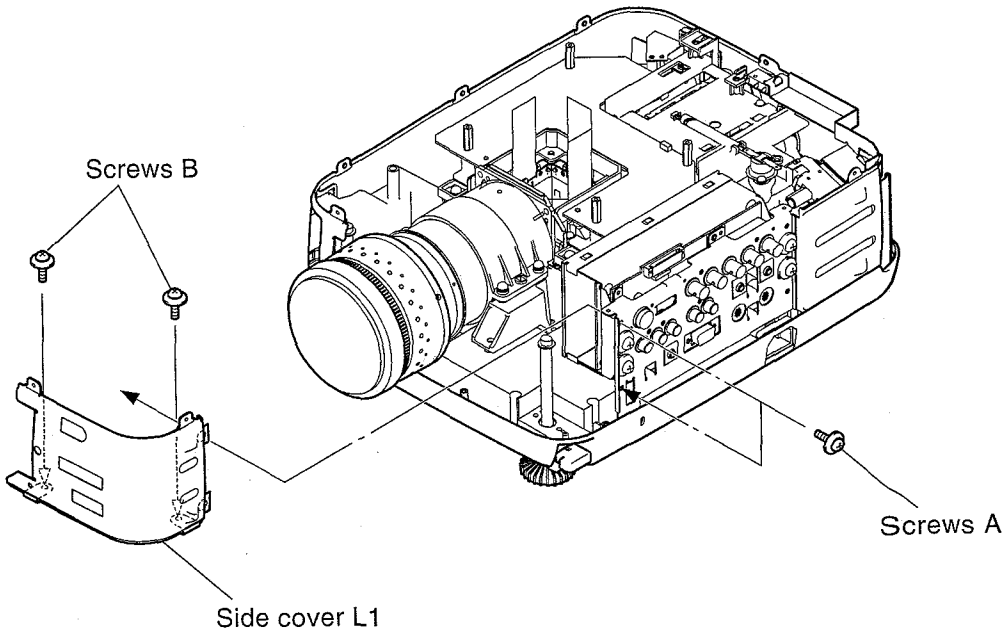
## 7.11 Front case

1. Remove the stopper.
2. Remove the tabs on both sides of the front cover (4 locations) from the side cover using a slotted screwdriver, etc.



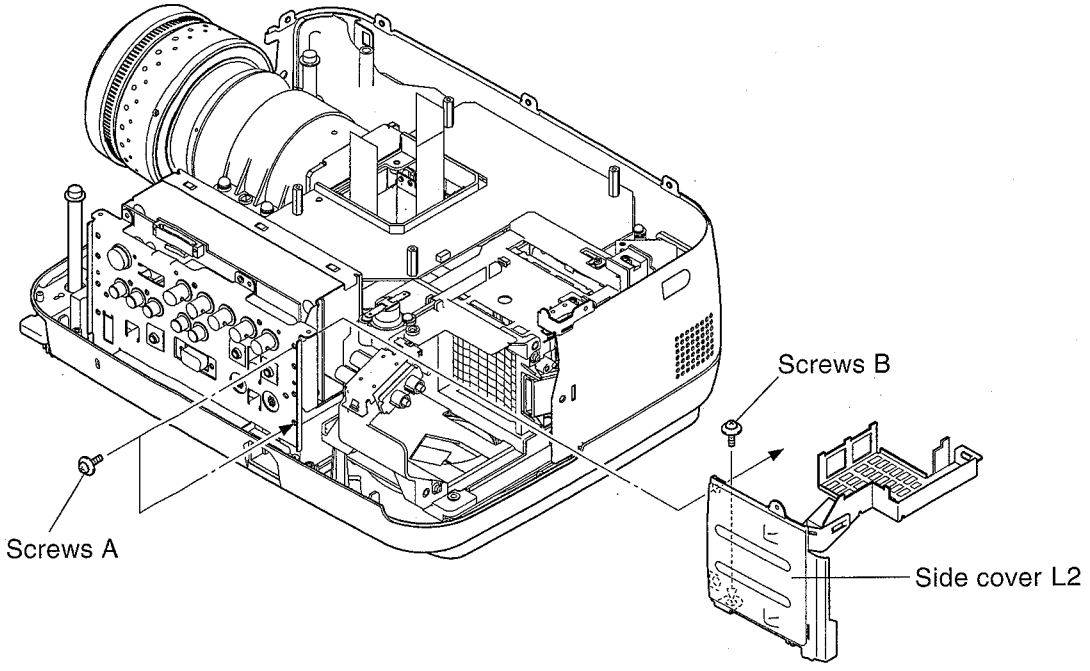

## 7.12 Side cover L1

1. Remove screws A (2 units)
2. Remove screws B (2 units) and remove side cover L1.



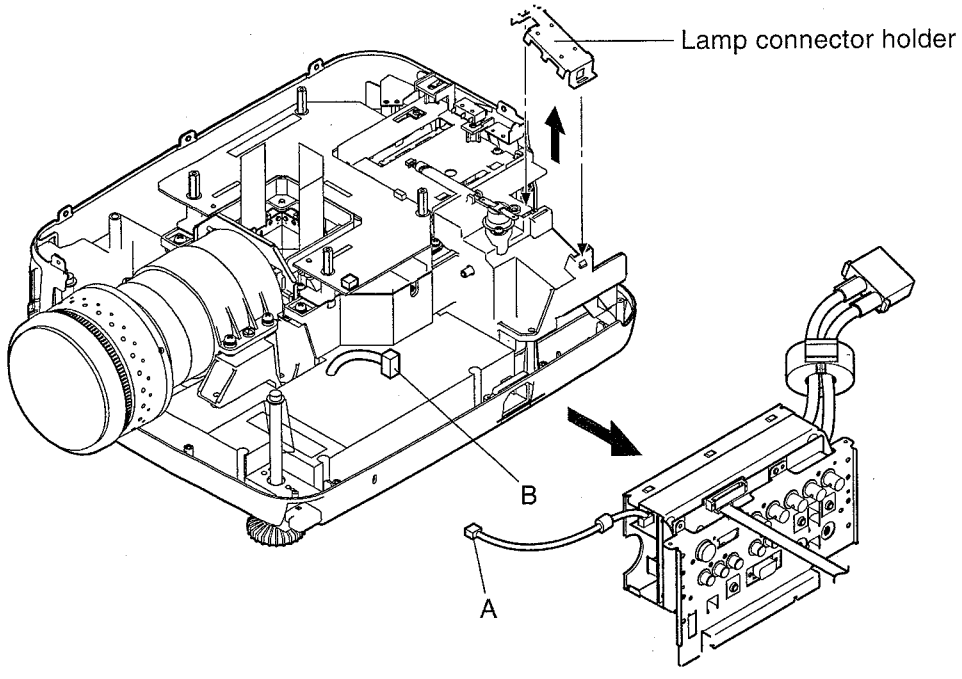
## 7.13 Side cover L2

1. Remove screws A (2 units)
2. Remove screws B (2 units) and remove side cover L2.

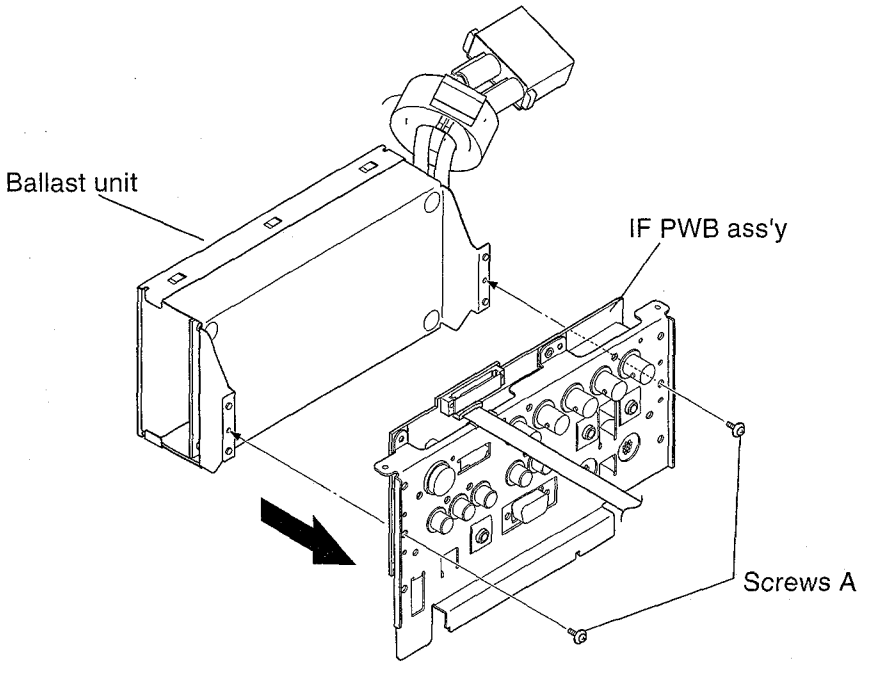



## 7.14 IF PWB ass'y/ballast unit

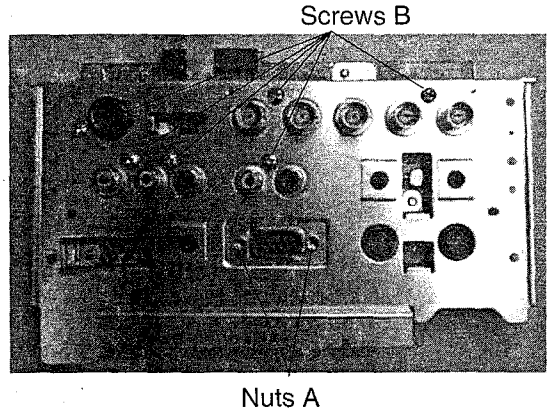
1. Remove cable A connected to the driver PWB ass'y.
2. Remove cable B connected to the power supply unit and ballast unit.
3. Remove the lamp connector holder using a slotted screwdriver and remove the unit.

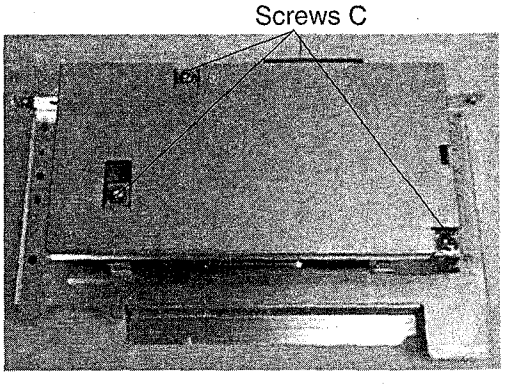


4. Remove screws A (2 units).




5. Remove screws B (6 units).
6. Remove nuts A (2 units) using a 5mm nut driver.
7. Remove screws C (3 units)



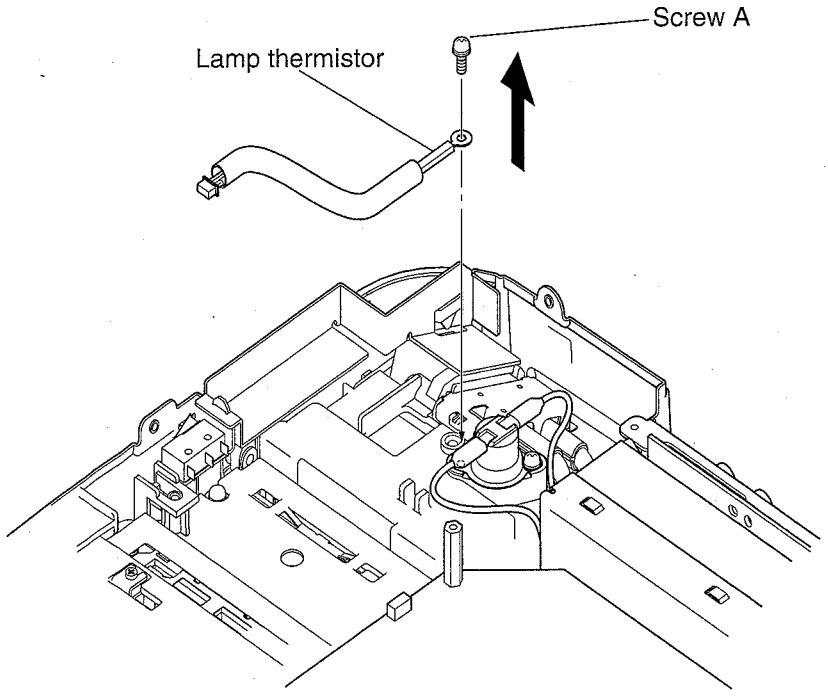




**Note:**

**When remounting, properly set the cables so as to not pinch them.**

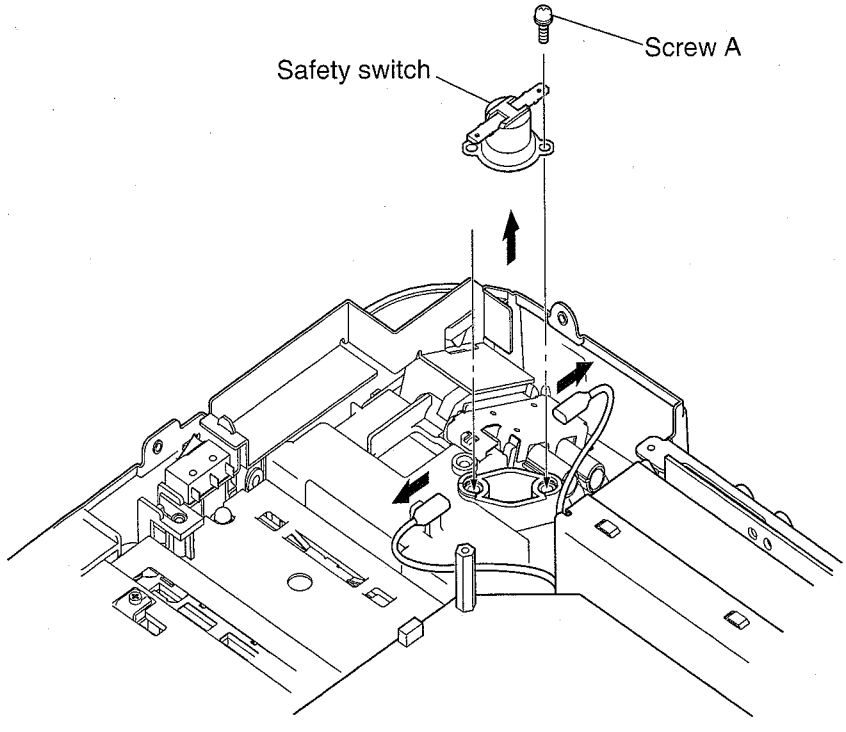
## 7.15 Lamp thermistor

1. Remove screw A (1 unit) and remove the lamp thermistor.



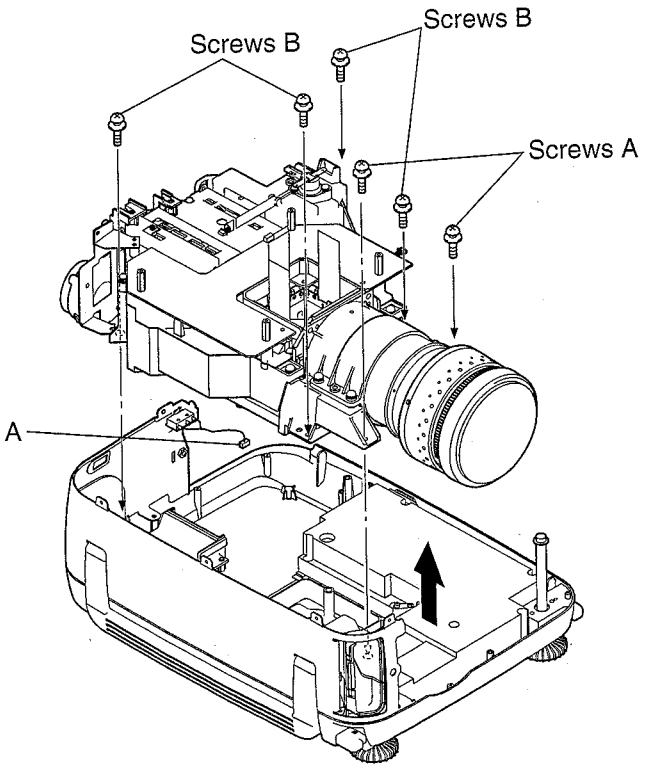

## 7.16 Safety switch

1. Disconnect the cable from the safety switch.
2. Remove screw A (1 unit) and remove the safety switch.



## 7.17 Optical engine

1. Remove cable A.
2. Remove screws A (2 units) and screws B (4 units), and then remove the optical engine.

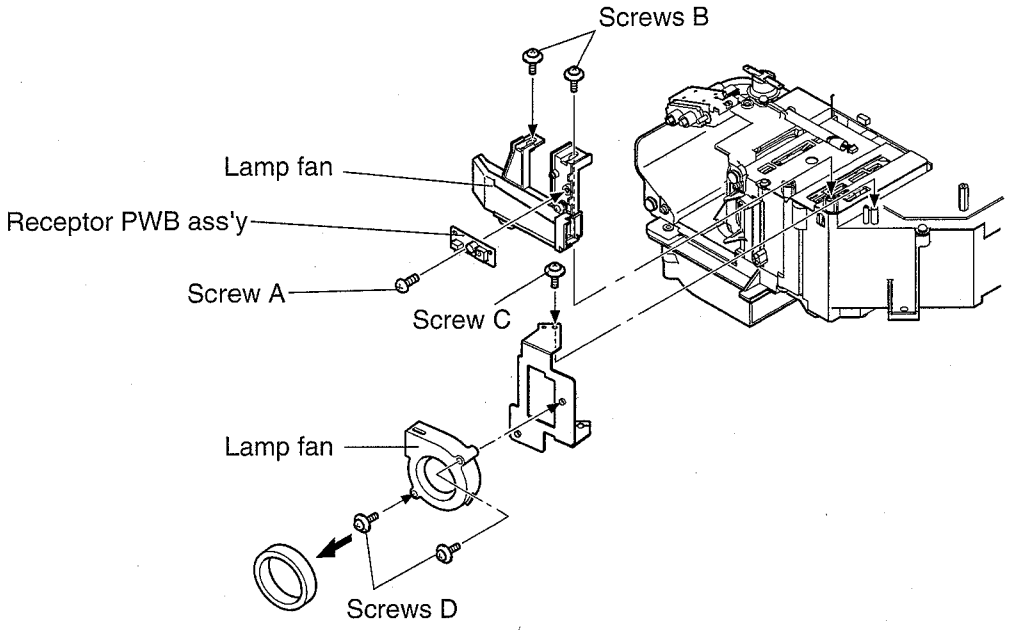



**Notes:**

- **The prism, lens, etc. are exposed from the optical engine. Take caution as to not scratch or dirty the optical parts. When dirtied, wipe with cleaning paper, etc.**
- **Check for any soiling and if necessary, remove dust from the optical engine using a vacuum cleaner, etc. Take special caution to the intake fan and the air filter area as they adhere dust easily. Furthermore, always perform cleaning before placing the optical engine in an antistatic bag.**
- **Remove intake fan and air filter from the optical engine before cleaning.**
- **To protect the optical engine from dust and static electricity, place the remove optical engine in an antistatic bag, etc. after cleaning.**
- **When re-installing the optical engine to the bottom chassis, be sure to clean the bottom chassis first. Dust adhered on the bottom chassis will be sucked into the intake fan and adhering on the LCD panels, resulting in an adverse influence on the display quality.**

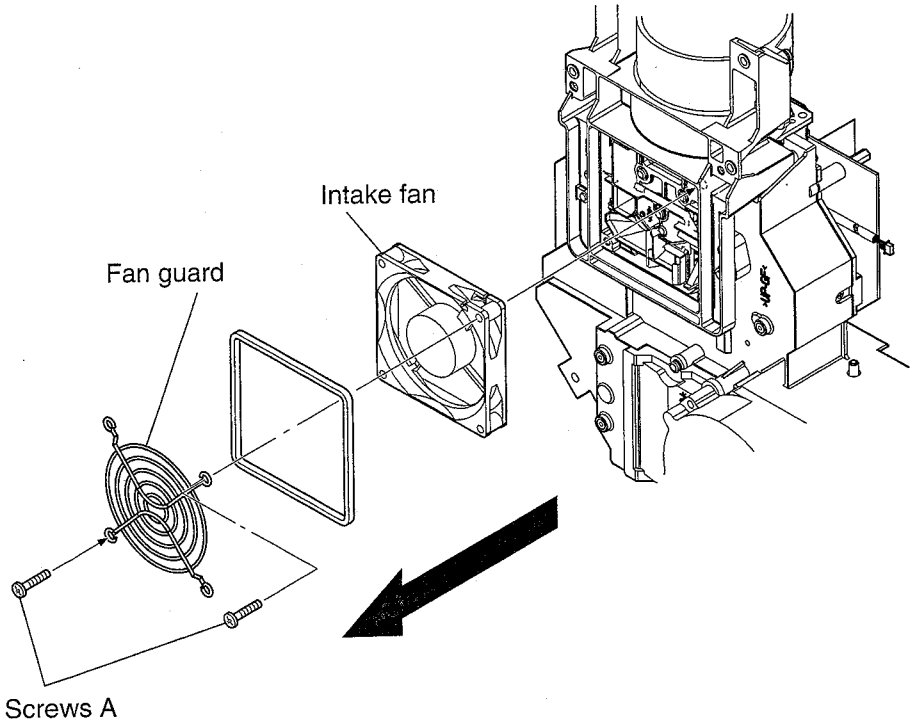
## 7.18 Reinforcement duct/lamp fan

1. Remove screw A (1 unit) and remove the receptor PWB ass'y.
2. Remove screws B (2 units) and remove the reinforcement duct.
3. Remove screw C (1 unit) and screws D (2 units), and then remove the lamp fan.

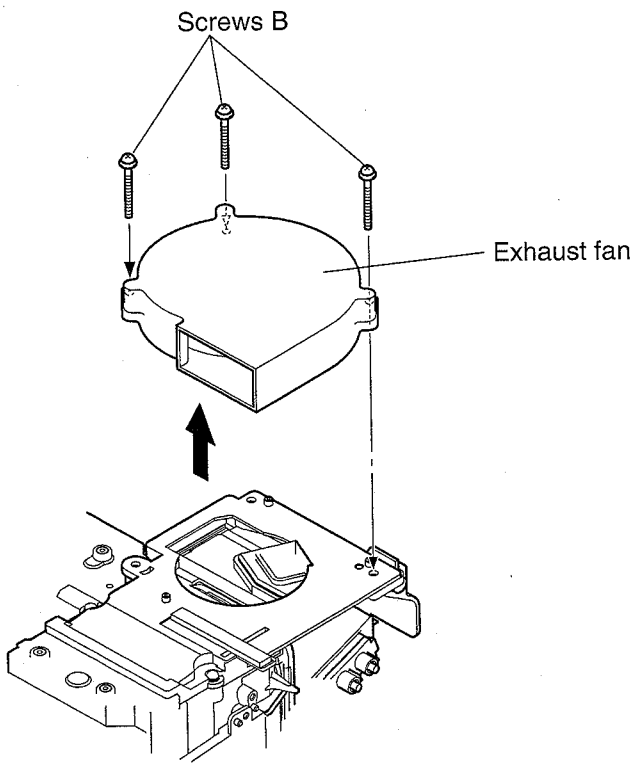


## 7.19 Intake fan/exhaust fan

1. Remove screw A (2 units), and then remove the fan guard and intake fan.

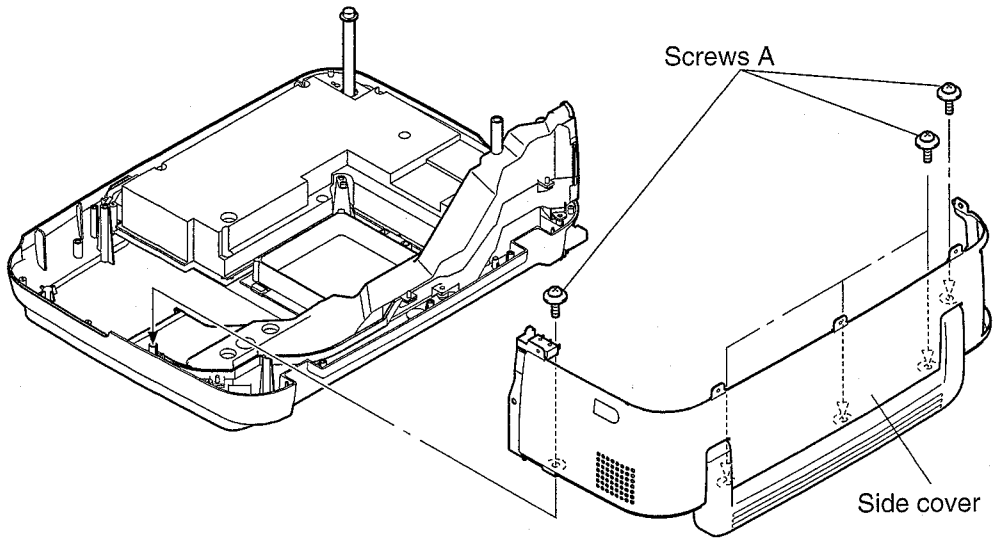



2. Remove screws B (3 units), and then remove the exhaust fan.

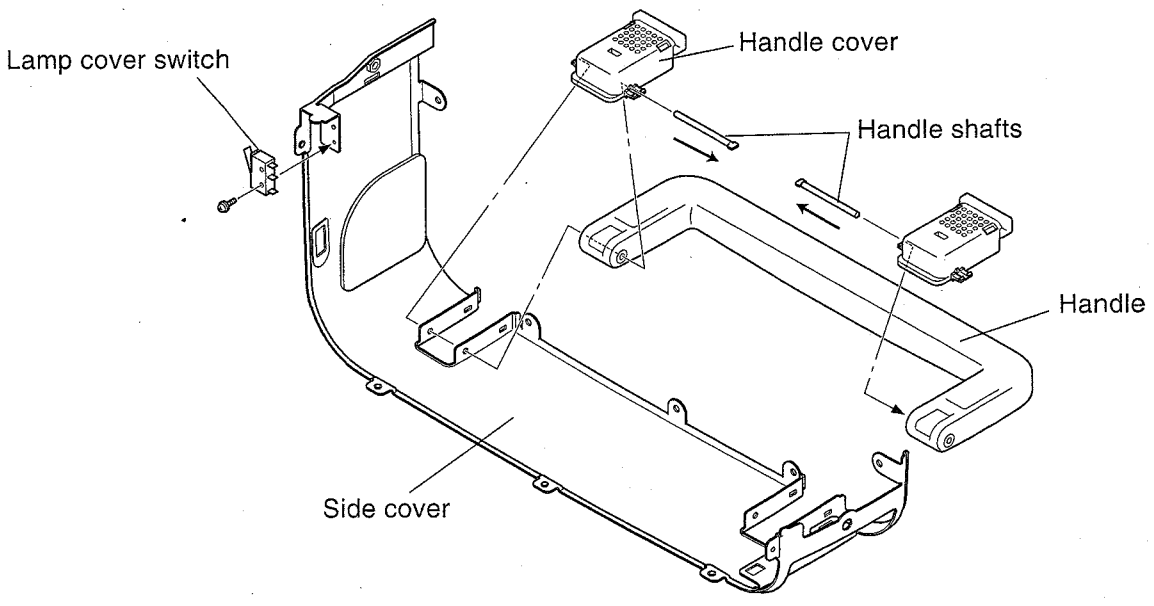


## 7.20 Side cover

1. Remove screws A (5 units), and then remove the side cover.

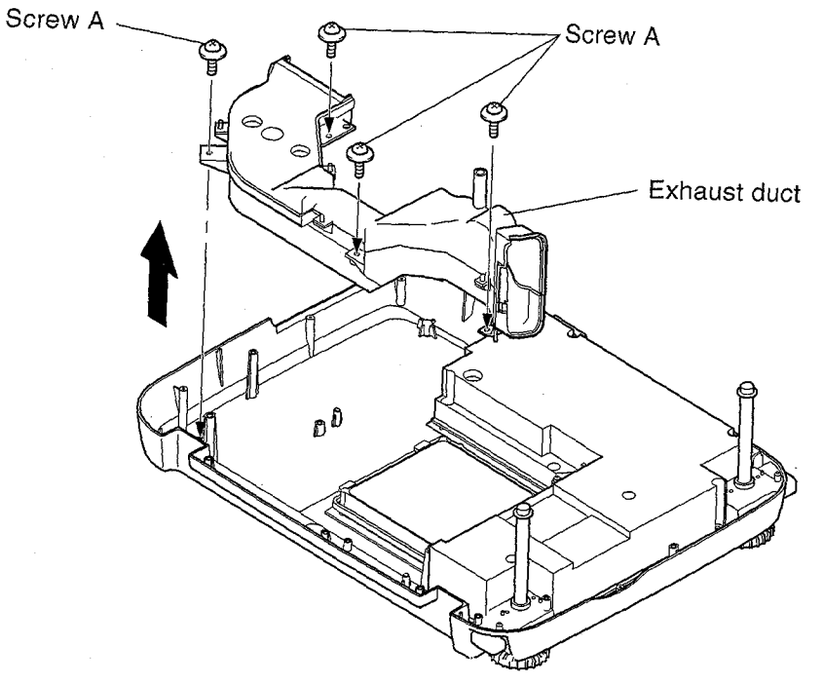



2. Pull the handle shafts in the direction of the arrow, then remove the handle and handle covers.



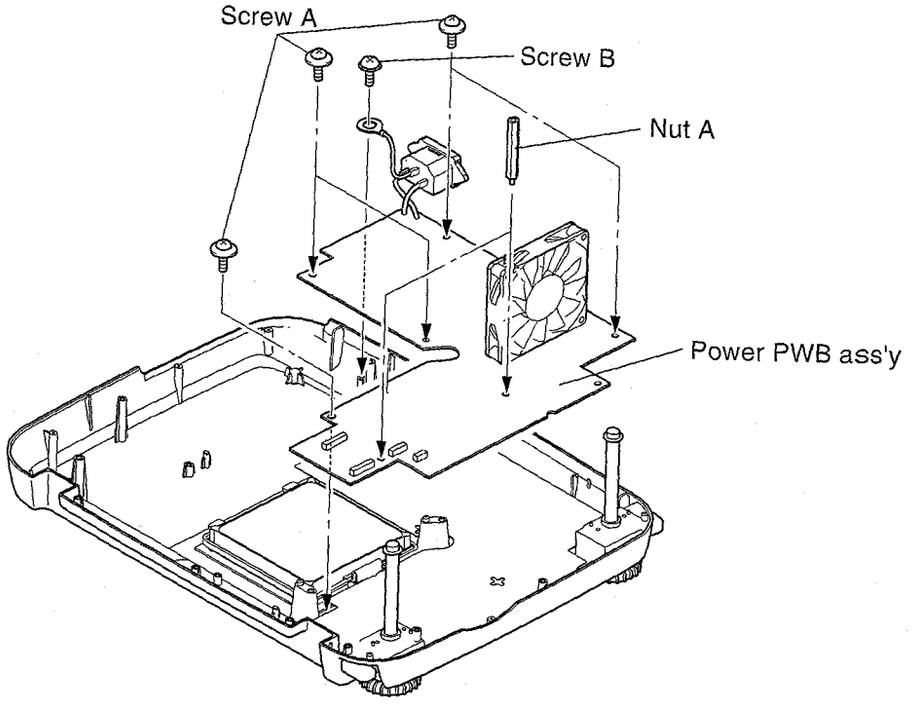
## 7.21 Exhaust duct

1. Remove screws A (4 units), and then remove the exhaust duct.

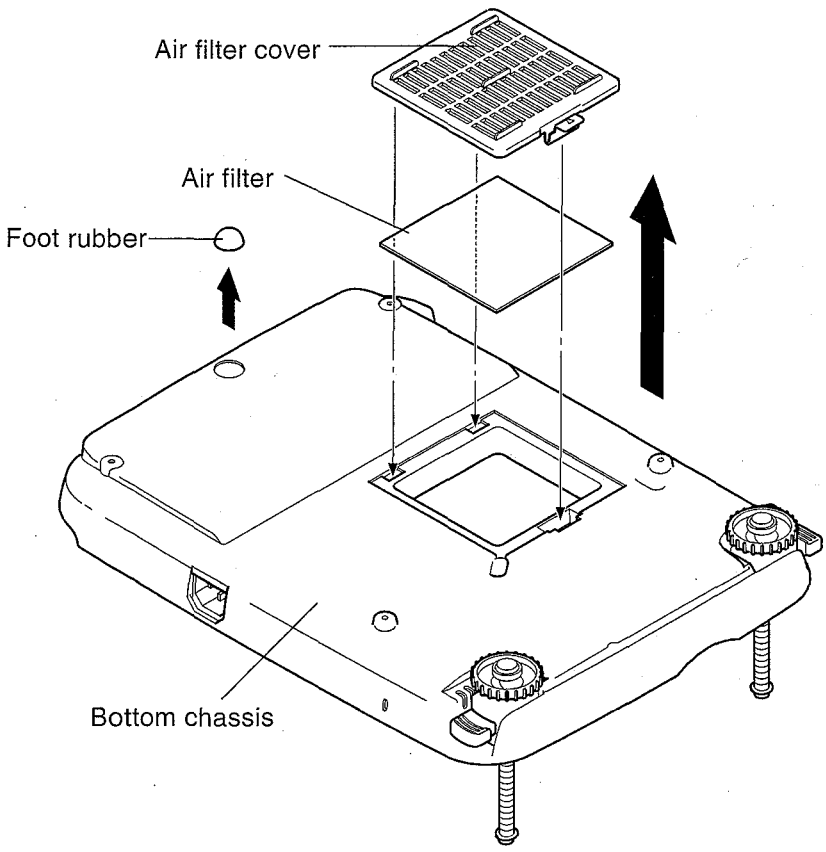



## 7.22 Power PWB ass'y

1. Remove nuts A (2 units) using a 5.5mm nut driver.
2. Remove screws A (5 units) and screw B (1 unit), and then remove the power PWB ass'y.

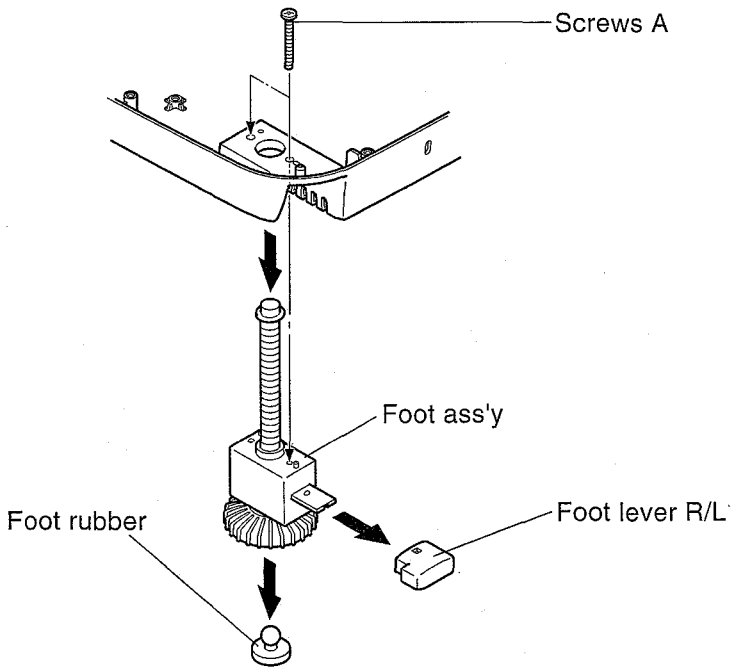


## 7.23 Bottom chassis




## 7.24 Foot ass'y

1. Remove screws A (2 units), and then remove the foot ass'y.



# 8. Troubleshooting

## 8.1 Before conducting troubleshooting

① After conducting repair by means of block or unit replacement, recheck the replaced unit to see whether it is defective or not (to distinguish whether the problem was caused bad connector contact, etc.).
② Make sure to check any point on the flowchart found necessary.
③ Replace units by following the steps indicated in 7. Disassembly and Reassembly.
④ Before checking operation, make sure that connectors, etc. are properly connected.

## 8.2 Equipment required for troubleshooting

The following equipment are required for troubleshooting.

| Name | Qty | Purpose/Other |
|---|---|---|
| Projection screen | 1 | For projecting images |
| PC | 1 | For conducting testing |
| Color display | 1 | For PC operation, display comparison |
| Video device | 1 | For conducting testing |
| External speakers | 1 | For audio output testing (for audio cable connection) |
| Multi-tester | 1 | For measuring the resistance and voltage |
| Conventional tools | 1 set | Tools and equipment indicated in 7.2 |

## 8.3 Field replacement parts

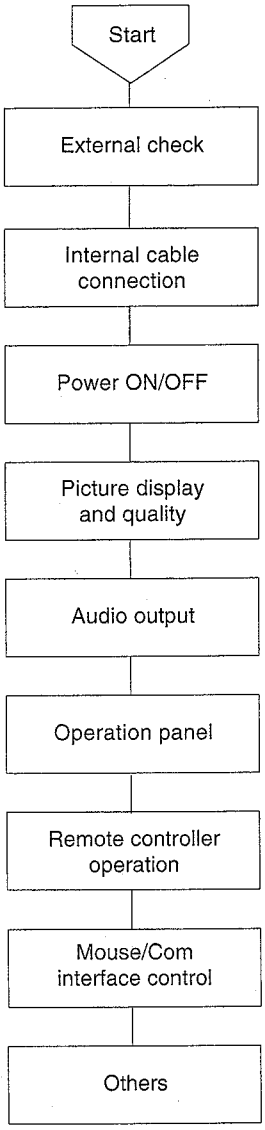
① When replacing parts using the dysfunction troubleshooting, make replacement in the parts unit indicated in the parts table at the end of the manual.
② The optical engine is a single servicing unit. Do not disassemble parts not mentioned in 7. Disassembly and Reassembly.

**Note:**
**Due to space restrictions, this section describes parts as shown below.**

- **Main PWB ass'y: MA PWB**
- **Driver PWB ass'y: DR PWB**
- **Receptor PWB ass'y: RC PWB**
- **IF PWB ass'y: IF PWB**
- **Power PWB ass'y: PW PWB**

## 8.4 Entry

Check errors by following the following flowchart, then advance to the flowchart for the relevant item on the following pages.




- External check
  Check for external problems (damage to cover, etc.)

- Internal cable connection check
  Check cable connector connections by removing the top cover.

- Power ON/OFF and initialize
  Connect the power supply cable and turn on the power. Check the initialization operation and power-off operation from when the power is turned on to when NO SIGNAL is displayed.

- Display I/O and picture quality
  Check each I/O signal and picture quality from Computer 1, Video and S-VideoIn
  Check Monitor Out output signal to external monitor.

- Audio I/O
  Check input of Audio1 and Audio (S/BNC) from Computer, Audio L/R from Video and Audio L/R from S-Video.
  Check Audio Out to external device.

- Operation panel operation
  Check operation of each button on operation panel

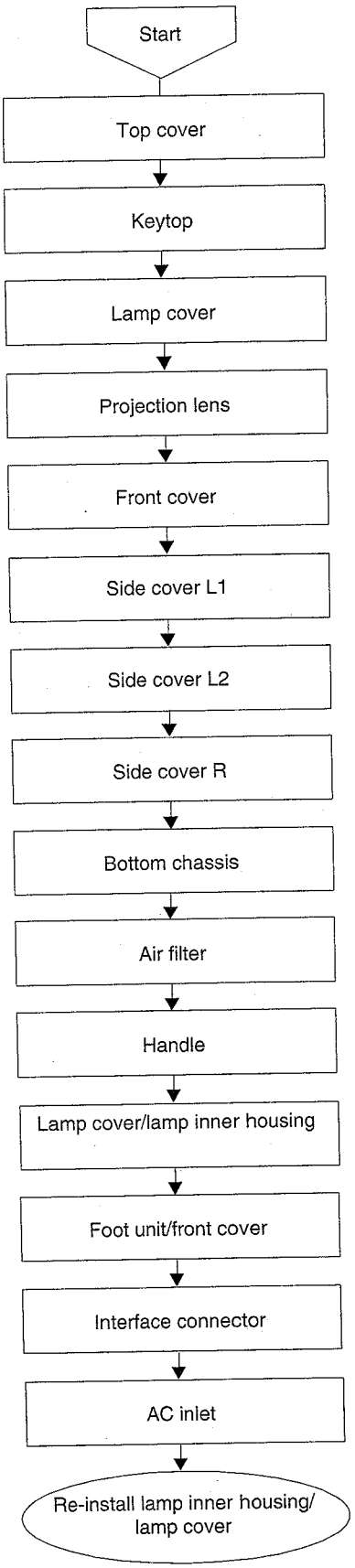
- Remote controller (front/rear)
  Check operation of each button on the remote controller

- Remote controller operation
  Check PC operation using remote controller

- Others
  Noise, overheating, problems that cannot be reproduced easily.

## 8.5 External check

Turn off the power, and disconnect all power cables and connection cables before performing check.




- Is there any damage, deformation or cracks due to dropping, etc.?
- Is it securely fastened to each side cover by screws?

- Is it correctly installed to the speaker unit?
- Is there a button that remains pressed?

- Is there any damage, deformation or cracks due to dropping, etc.?
- Is the side cover correctly installed?
- Is the vent hole or exhaust fan dirty?

- Do the focus and zoom rings turn smoothly?
- Is the lens dirty or scratched?

- Is there any damage, deformation or cracks due to dropping, etc.?

- Is there any damage, deformation or cracks due to dropping, etc.?
- Is there dirt or foreign material (tape, etc.) on the remote controller receptor?

- Is there any damage, deformation or cracks due to dropping, etc.?

- Is there any damage, deformation or cracks due to dropping, etc.?
- Is there dirt or foreign material (tape, etc.) on the remote controller receptor?

- Is there any damage, deformation or cracks due to dropping, etc.?

- Is it securely fastened to the bottom chassis?
- Is the filter dirty?
- Is the intake fan dirty?

- Is the handle or lens shift damaged?

- Check by removing the lamp cover and lamp inner housing
- Is the plastic frame deformed or burned (discolored)?
- Is the power supply connector section discolored?
- Is the lamp's reflecting plate or surroundings dirty?

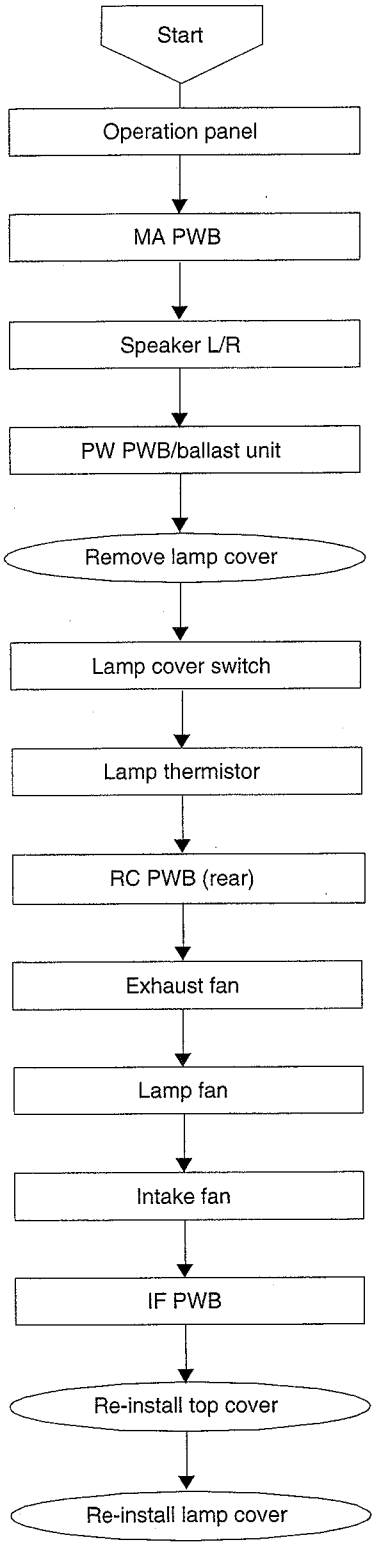
- Can the height be adjusted smoothly using the foot lever?

- Are the connectors or terminals on the sides deformed or discolored?
- Is there any foreign material on the connector or terminals?

- Is the connector terminal discolored?
- Is the socket damaged?

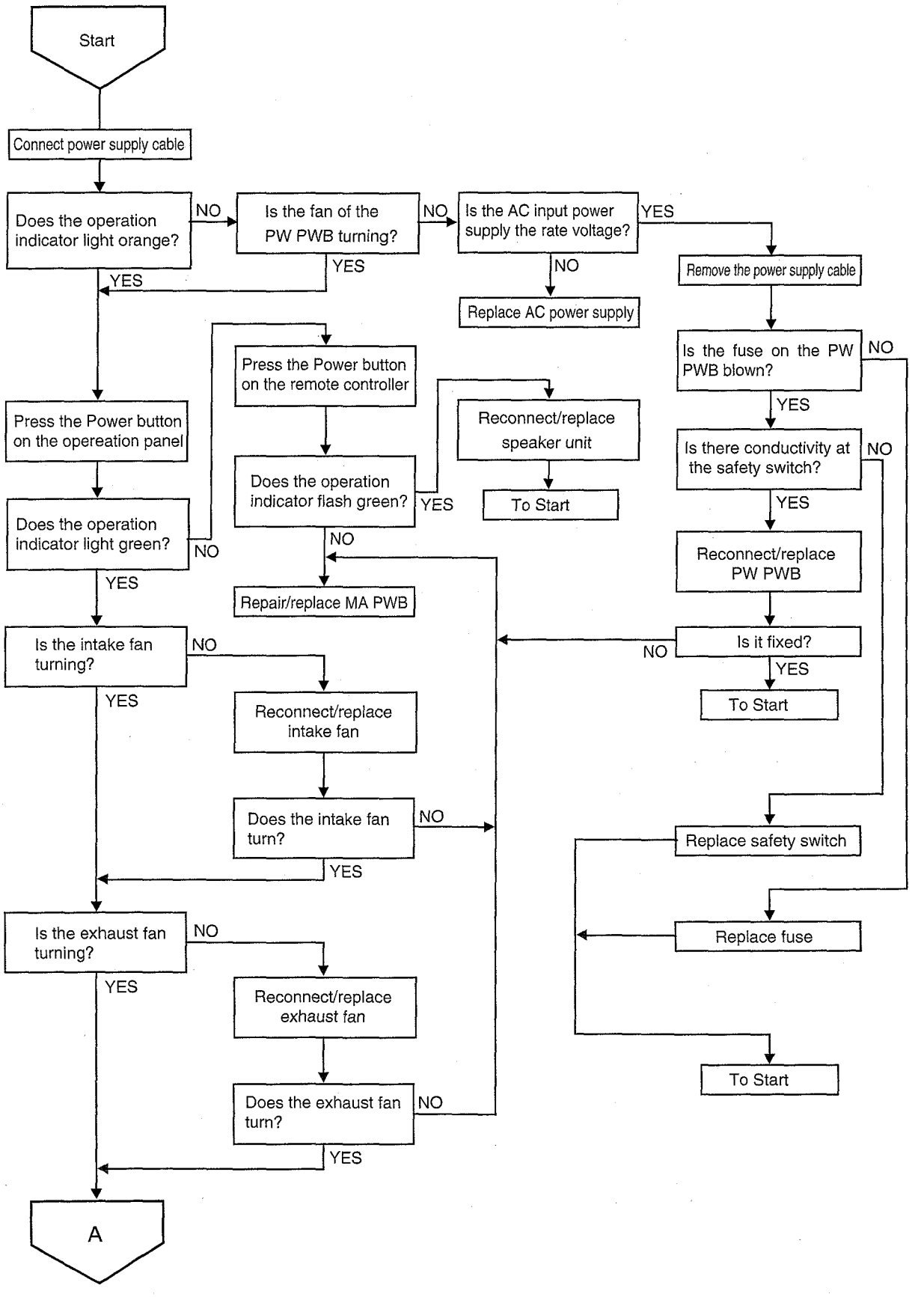
## 8.6 Internal cable connection check

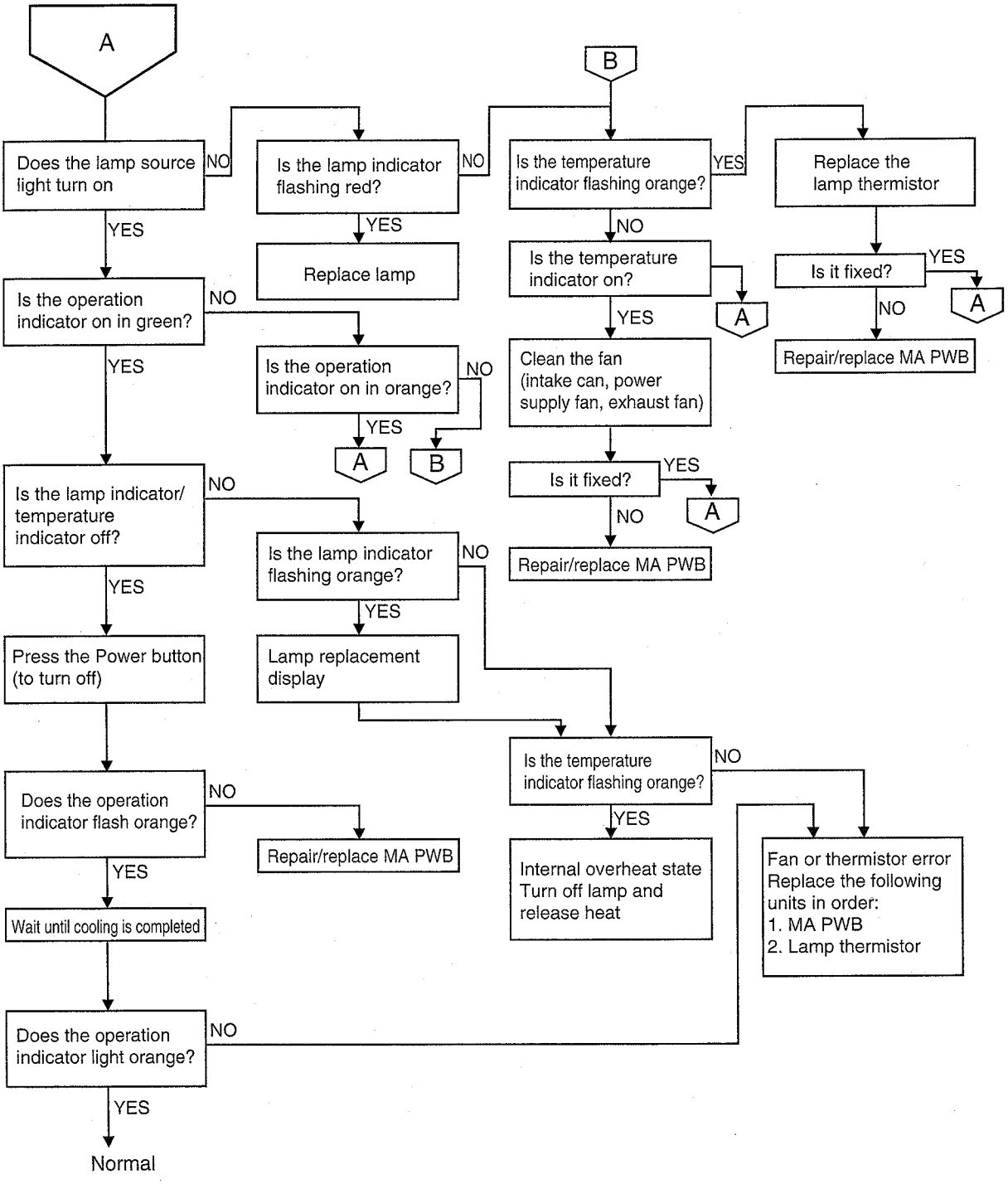
Turn off the power, and disconnect all power cables and connection cables before performing check.




- MA PWB CN1006 (lock-type connector)
- MA PWB CN1006←→Speaker unit CN100
- MA PWB CN1800←→IF PWB CN301
- MA PWB CN1804←→IF PWB CN303(Lock-type connector)
- MA PWB CN1801/CN1802
- MA PWB CN1004←→PW PWB
- DR PWB CN201←→ballast unit
- PW PWB→ballast unit
- DR PWB CN200←→Lamp cover switch
- MA PWB CN1010
- MA PWB CN1001
- MA PWB CN1402
- MA PWB CN1401
- MA PWB CN1400
- IF PWB CN301←→MA PWB CN1800

## 8.7 Power on/off




A
Does the lamp source light turn on
NO
YES
Is the operation indicator on in green?
NO
YES
Is the lamp indicator/ temperature indicator off?
NO
YES
Press the Power button (to turn off)
Does the operation indicator flash orange?
NO
YES
Wait until cooling is completed
Does the operation indicator light orange?
NO
YES
Normal
Is the lamp indicator flashing red?
NO
YES
Replace lamp
Is the operation indicator on in orange?
NO
YES
A
B
Is the lamp indicator flashing orange?
NO
YES
Lamp replacement display
Repair/replace MA PWB
B
Is the temperature indicator flashing orange?
YES
NO
Is the temperature indicator on?
YES
NO
A
Clean the fan (intake can, power supply fan, exhaust fan)
Is it fixed?
YES
NO
A
Repair/replace MA PWB
Is the temperature indicator flashing orange?
NO
YES
Internal overheat state Turn off lamp and release heat
Replace the lamp thermistor
Is it fixed?
YES
NO
A
Repair/replace MA PWB
Fan or thermistor error Replace the following units in order:
1. MA PWB
2. Lamp thermistor

## 8.8 Screen display/picture quality

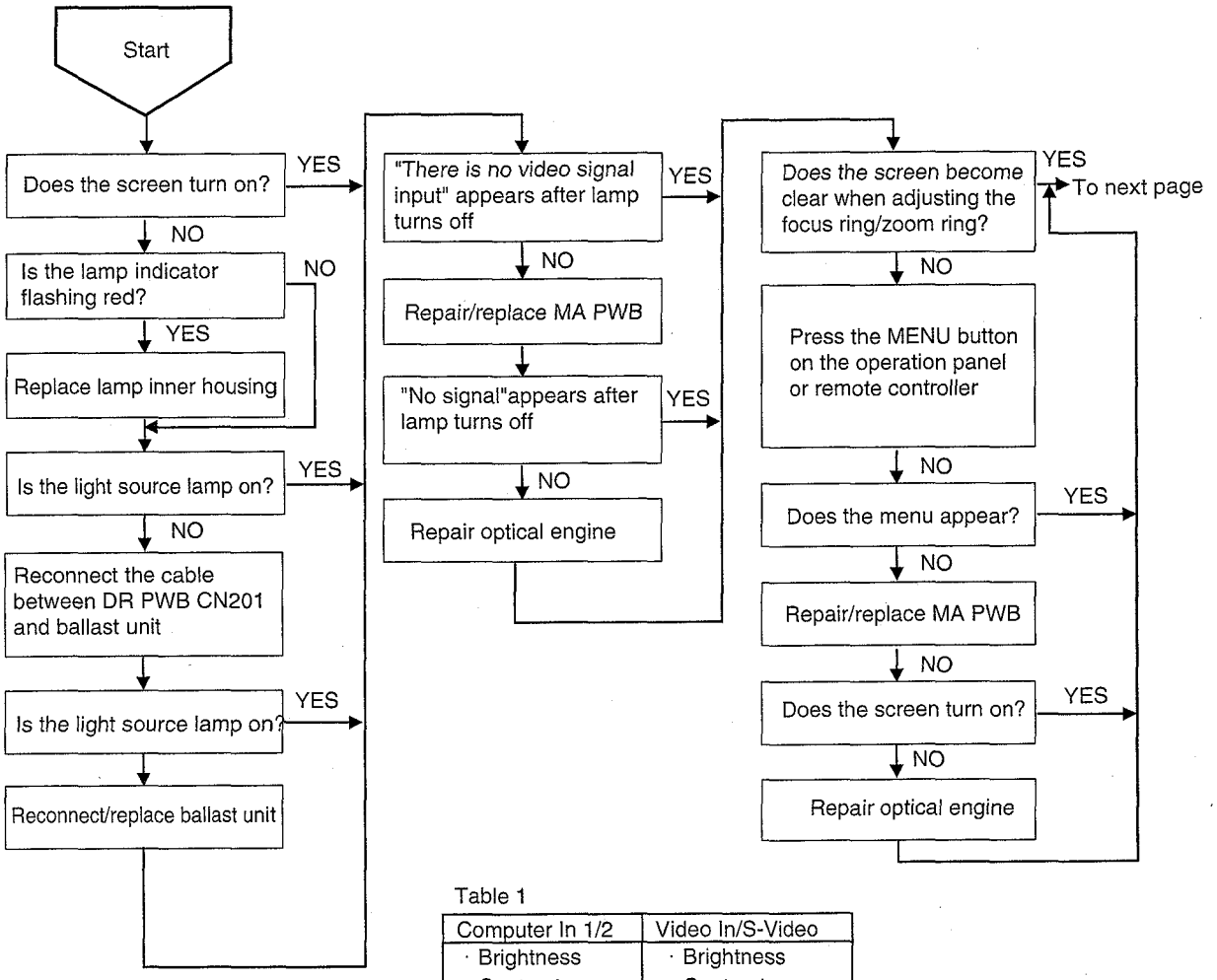
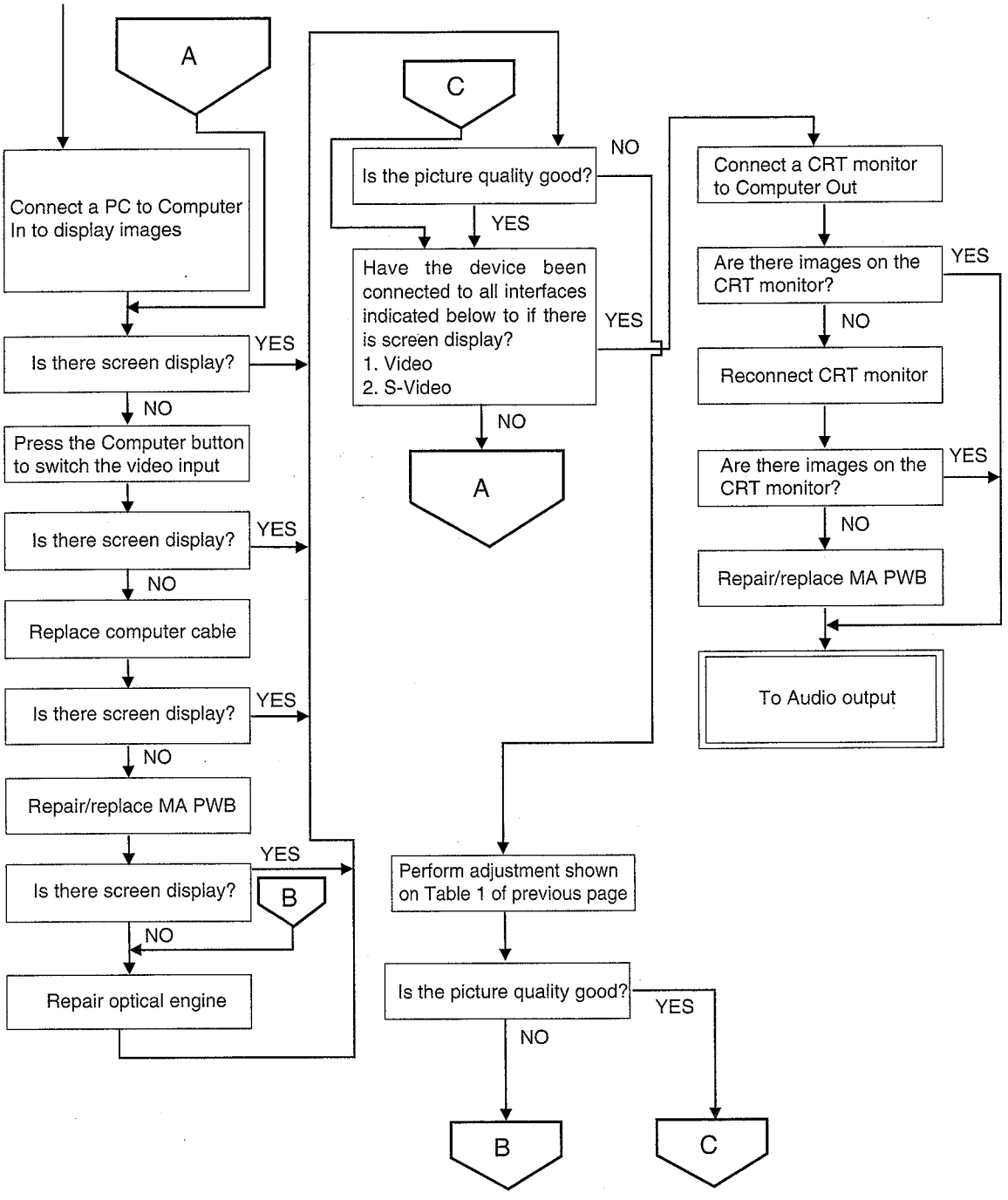



Table 1

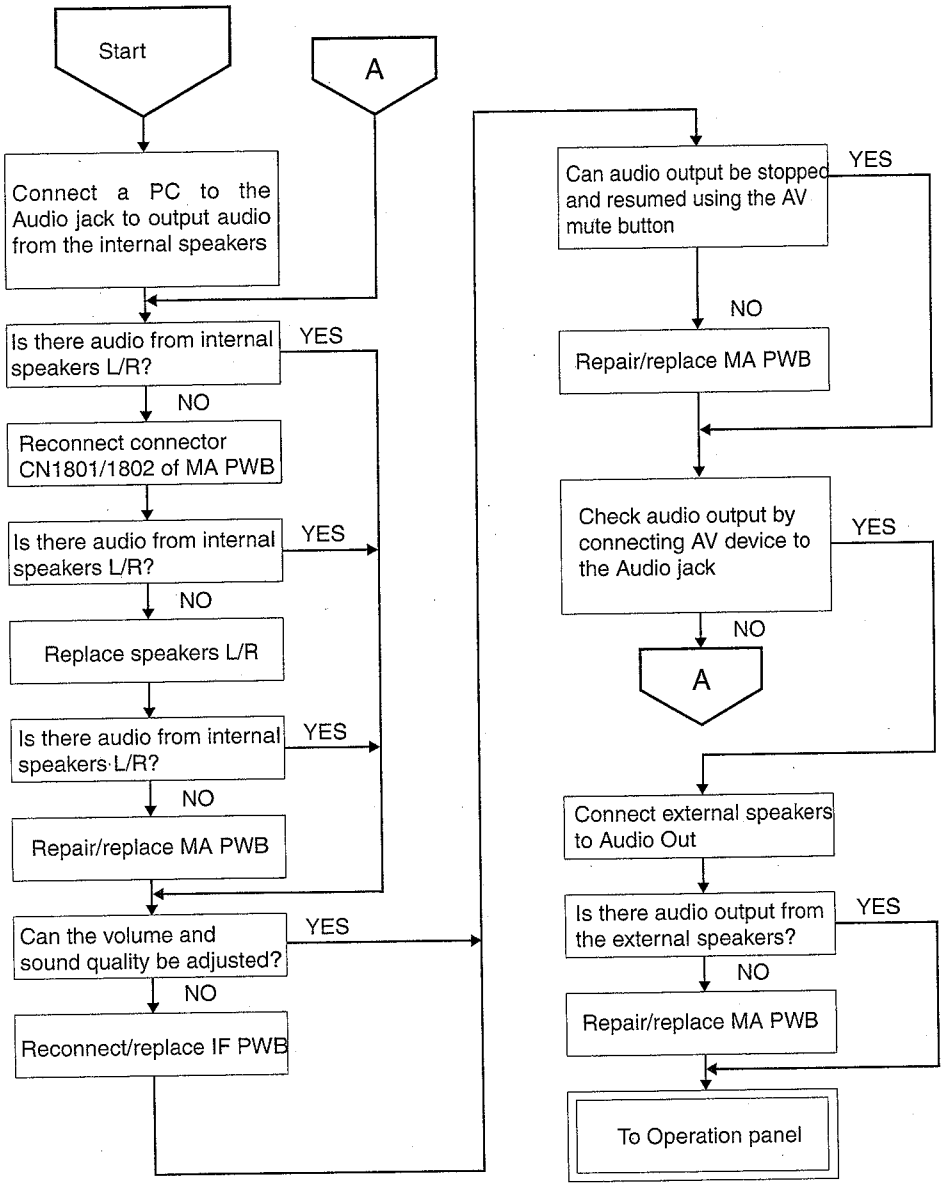
| Computer In 1/2 | Video In/S-Video |
|---|---|
| · Brightness | · Brightness |
| · Contrast | · Contrast |
| · Sync | · Color |
| · Tracking | · Tint |
| · Sharpness | · Sharpness |

Note : Bad picture quality can also be caused by dirty projection lens or condensation. If caused by condensation, letting it stand for sometime will naturally cure the problem.

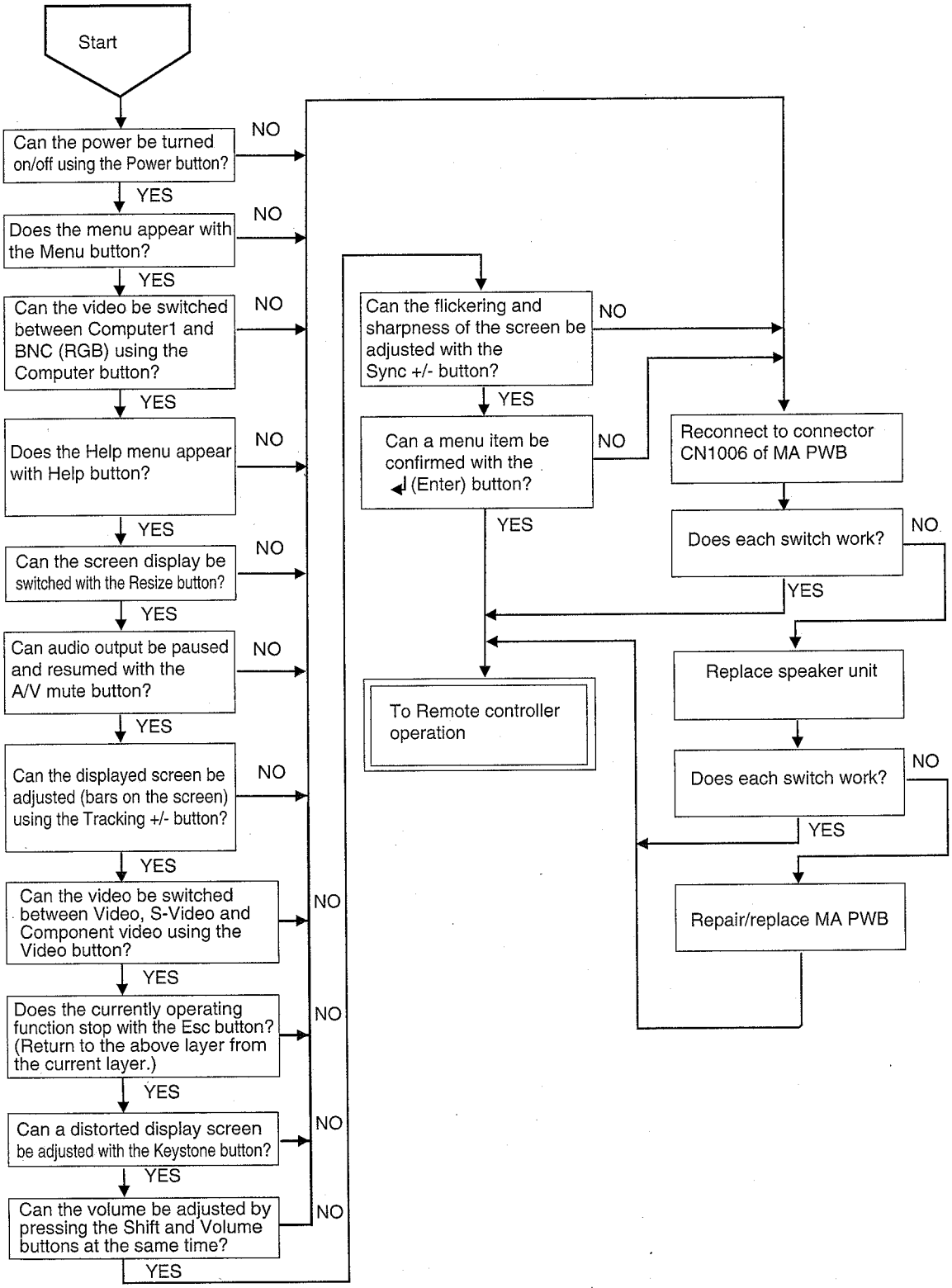
Continued from previous page (screen display/picture quality)



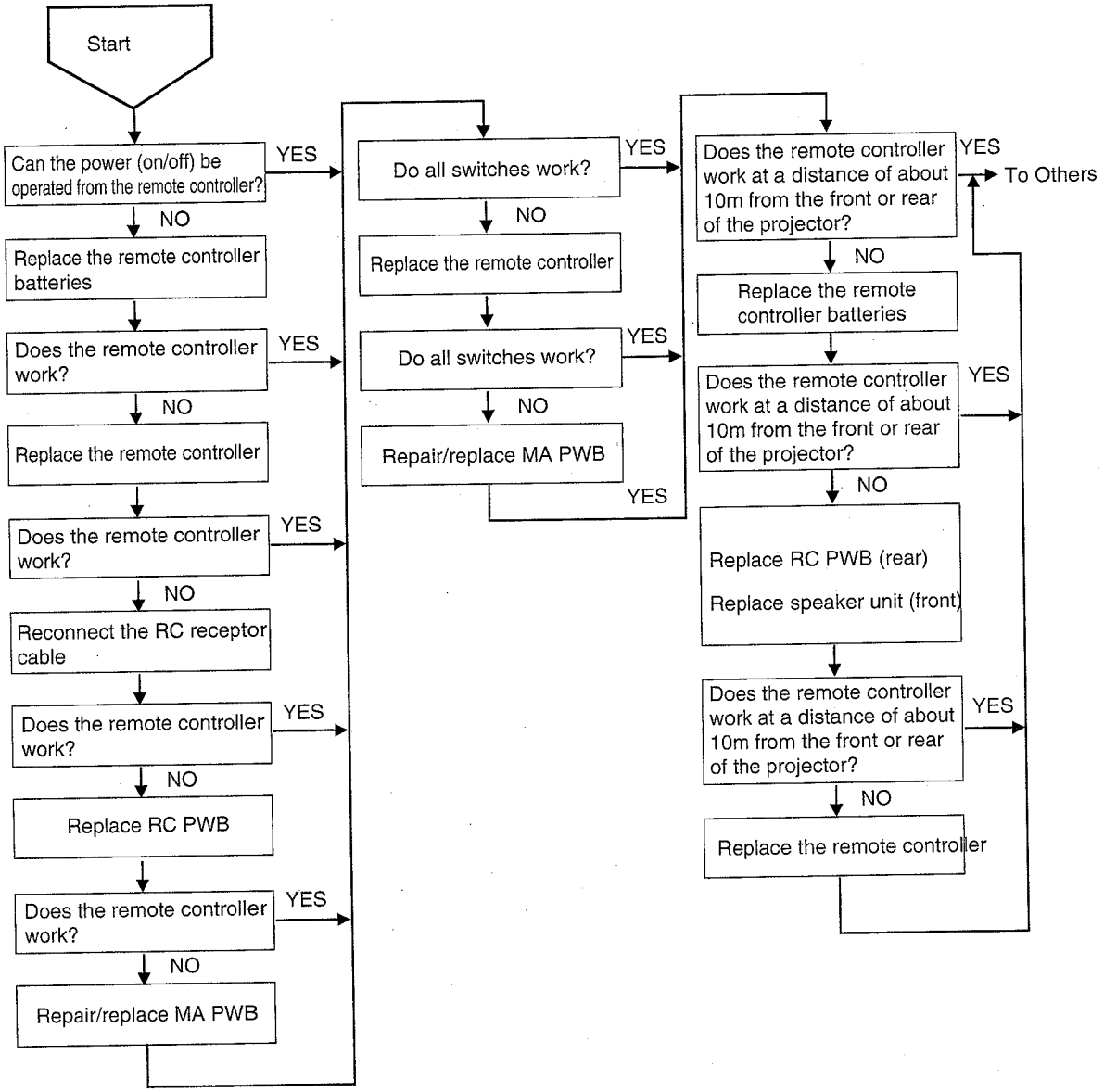
## 8.9 Audio output



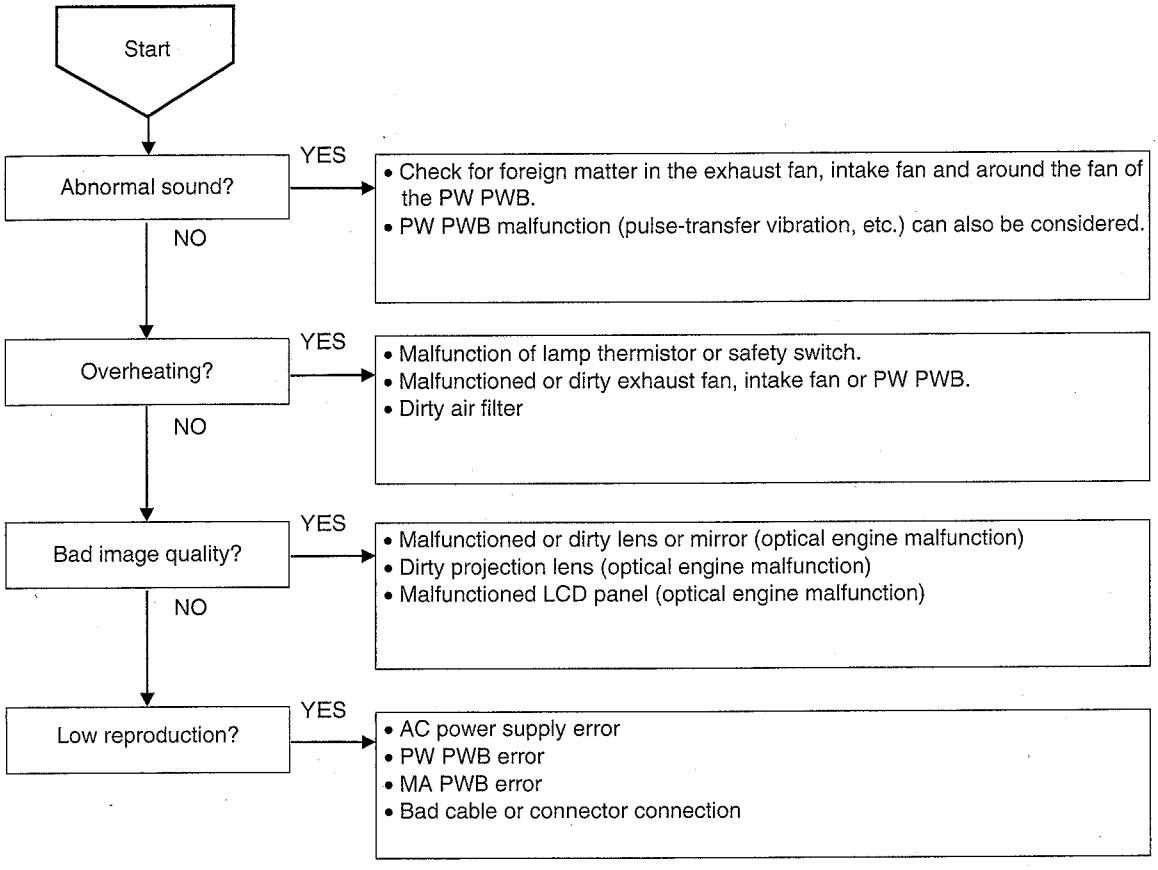
## 8.10 Operation panel


Start
Can the power be turned on/off using the Power button?
NO
YES
Does the menu appear with the Menu button?
NO
YES
Can the video be switched between Computer1 and BNC (RGB) using the Computer button?
NO
YES
Does the Help menu appear with Help button?
NO
YES
Can the screen display be switched with the Resize button?
NO
YES
Can audio output be paused and resumed with the A/V mute button?
NO
YES
Can the displayed screen be adjusted (bars on the screen) using the Tracking +/- button?
NO
YES
Can the video be switched between Video, S-Video and Component video using the Video button?
NO
YES
Does the currently operating function stop with the Esc button? (Return to the above layer from the current layer.)
NO
YES
Can a distorted display screen be adjusted with the Keystone button?
NO
YES
Can the volume be adjusted by pressing the Shift and Volume buttons at the same time?
NO
YES
Can the flickering and sharpness of the screen be adjusted with the Sync +/- button?
NO
YES
Can a menu item be confirmed with the ↵ (Enter) button?
NO
YES
To Remote controller operation
Reconnect to connector CN1006 of MA PWB
Does each switch work?
NO
YES
Replace speaker unit
Does each switch work?
NO
YES
Repair/replace MA PWB

## 8.11 Remote controller operation

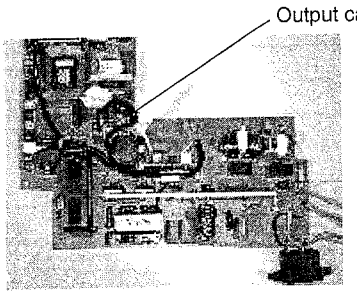


## 8.12 Others


Start
Abnormal sound?
YES
• Check for foreign matter in the exhaust fan, intake fan and around the fan of the PW PWB.
• PW PWB malfunction (pulse-transfer vibration, etc.) can also be considered.
NO
Overheating?
YES
• Malfunction of lamp thermistor or safety switch.
• Malfunctioned or dirty exhaust fan, intake fan or PW PWB.
• Dirty air filter
NO
Bad image quality?
YES
• Malfunctioned or dirty lens or mirror (optical engine malfunction)
• Dirty projection lens (optical engine malfunction)
• Malfunctioned LCD panel (optical engine malfunction)
NO
Low reproduction?
YES
• AC power supply error
• PW PWB error
• MA PWB error
• Bad cable or connector connection

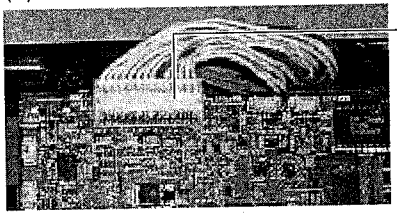
# 9. Connector terminal function

(1) Power PWB ass'y (ballast output)




| No. | Signal name | Remarks |
|---|---|---|
| 1(WHT) | HGND (+) | Ballast output (+) |
| 2(BLK) | BAHV (-) | Ballast output (-) |

(2) Power PWB ass'y⟷MAIN PWB ass'y CN1004



| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 Red | 5 | 4 | 3 | 2 | 1 |
| 28 | 27 | 26 Red | 25 | 24 | 23 | 22 | 21 Red | 20 | 19 | 18 | 16 | 16 | 15 Red |

| No. | Signal name | Remarks | No. | Signal name | Remarks |
|---|---|---|---|---|---|
| 1 | FANCL | Fan control | 15 | PWON | Main power supply ON/OFF |
| 2 | +13V | Main power supply | 16 | GND | |
| 3 | -7V | Main power supply | 17 | GND | |
| 4 | +18V | Main power supply | 18 | GND | |
| 5 | +7V | Main power supply | 19 | GND | |
| 6 | +11V | Main power supply | 20 | GND | |
| 7 | +3.3V_R | Main power supply | 21 | GND | |
| 8 | +3.3V_R | Main power supply | 22 | GND | |
| 9 | +3.3V_R | Main power supply | 23 | GND | |
| 10 | +3.3V_T | Sub-power supply | 24 | GND | |
| 11 | +3.3V_T | Sub-power supply | 25 | GND | |
| 12 | +3.3V_T | Sub-power supply | 26 | GND | |
| 13 | +5V_T | Sub-power supply | 27 | +5V_T | Sub-power supply |
| 14 | +12V_T | Sub-power supply | 28 | +5V_T | Sub-power supply |

(3) Main PWB ass'y CN1800 ⟷ IF PWB ass'y CN301

| No. | Signal name | No | Signal name | No | Signal name | No | Signal name |
|---|---|---|---|---|---|---|---|
| 1 | CVBS | 21 | GND | 41 | GND | 61 | CLK2 |
| 2 | GND | 22 | NC | 42 | RTS1 | 62 | GND |
| 3 | S-Y | 23 | NC | 43 | CTS1 | 63 | DAT2 |
| 4 | S-C | 24 | NC | 44 | RXD1 | 64 | ID20 |
| 5 | GND | 25 | GND | 45 | TXD1 | 65 | ID21 |
| 6 | R | 26 | CLK1 | 46 | GND | 66 | D+2 |
| 7 | GND | 27 | GND | 47 | IM2-R | 67 | D-2 |
| 8 | G | 28 | DATA1 | 48 | IM2-L | 68 | MREADY2 |
| 9 | GND | 29 | ID10 | 49 | GND | 69 | MTXD2 |
| 10 | B | 30 | ID11 | 50 | SCL | 70 | PCV2 |
| 11 | GND | 31 | D+1 | 51 | SDA | | |
| 12 | H | 32 | D-1 | 52 | GND | | |
| 13 | GND | 33 | MREADY1 | 53 | +12V | | |
| 14 | V | 34 | MTXD1 | 54 | GND | | |
| 15 | GND | 35 | PCV1 | 55 | L-OUT | | |
| 16 | CONTROL | 36 | +5V_T | 56 | R-OUT | | |
| 17 | GND | 37 | XDETN | 57 | GND | | |
| 18 | +12V | 38 | EXIRD | 58 | AJDET | | |
| 19 | +5V_A | 39 | GND | 59 | GND | | |
| 20 | -5V_A | 40 | GND | 60 | GND | | |

(4) Main PWB ass'y CN1006 ⟷ speaker unit CN100

| No. | Signal name | | No. | Signal name | No. | Signal name | | No. | Signal name |
|---|---|---|---|---|---|---|---|---|---|
| 1 | IRD | | 18 | IRD | 10 | GND | | 9 | GND |
| 2 | +5V_T | | 17 | +5V_T | 11 | KIN0 | | 8 | KIN0 |
| 3 | LED1 | | 16 | LED1 | 12 | KIN1 | | 7 | KIN1 |
| 4 | LED0 | | 15 | LED0 | 13 | KIN2 | | 6 | KIN2 |
| 5 | LED3 | ⟷ | 14 | LED3 | 14 | KOUT2 | ⟷ | 5 | KOUT2 |
| 6 | LED2 | | 13 | LED2 | 15 | KIN3 | | 4 | KIN3 |
| 7 | LED5 | | 12 | LED5 | 16 | KOUT0 | | 3 | KOUT0 |
| 8 | LED4 | | 11 | LED4 | 17 | GND | | 2 | GND |
| 9 | KOUT3 | | 10 | KOUT3 | 18 | KOUT1 | | 1 | KOUT1 |

(5) Intake fan (IN-FAN1) ⟷ main PWB ass'y CN1400

| No. | Signal name | Remarks |
|---|---|---|
| 1 | FVV0 | Power supply(+10V - +12V) |
| 2 | FRS0 | Detection (during rotation: low) |
| 3 | GND | |

(6) Lamp fan (IN-FAN2) ⟷ main PWB ass'y CN1401

| No. | Signal name | Remarks |
|---|---|---|
| 1 | FVV1 | Power supply |
| 2 | FRS1 | Detection (during rotation: low) |
| 3 | GND | |

(7) Exhaust fan (EX-FAN) ⟷ main PWB ass'y CN1402

| No. | Signal name | Remarks |
|---|---|---|
| 1 | FVV2 | Power supply(+8V - +11V) |
| 2 | FRS2 | Detection (during rotation: low) |
| 3 | GND | |

(8) Lamp thermistor (LH-TH) ⟷ main PWB ass'y CN1010

| No. | Signal name | Remarks |
|---|---|---|
| 1 | DGND | GND |
| 2 | LHDET | |
| 3 | TMPLH | Thermistor |

(9) Speaker L (SP-L) ⟷ main PWB ass'y CN1801

| No. | Signal name | Remarks |
|---|---|---|
| 1 | SP-L+ | |
| 2 | SP-L- | |

(10) Speaker R (SP-R) ⟷ main PWB ass'y CN1802

| No. | Signal name | Remarks |
|---|---|---|
| 1 | SP-R+ | |
| 2 | SP-R- | |

(11) Main PWB ass'y CN1001 ⟷ receptor PWB ass'y (RCR)

| No. | Signal name | | No. | Signal name | Remarks |
|---|---|---|---|---|---|
| 1 | GND | ⟷ | 1 | DGND | |
| 2 | GND | | 2 | DGND | |
| 3 | +5V | | 3 | +5V_S | |
| 4 | RQIR | | 4 | FIRD | Command |

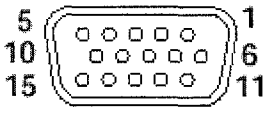
(12) Driver PWB ass'y CN201 ⟷ ballast unit

| No. | Signal name | | No. | Signal name | Remarks |
|---|---|---|---|---|---|
| 1 | BACTA | ⟷ | 1 | BACTA | |
| 2 | BGND | | 2 | BGND | |
| 3 | LPSTC | | 3 | LPSTC | |
| 4 | NC | | — | | |

(13) Driver PWB ass'y CN200 ⟷ Lamp cover switch

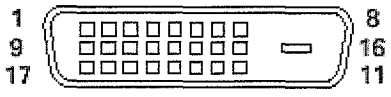
| No. | Signal name | Remarks |
|---|---|---|
| 1 | MSWCOM | |
| 2 | MSWOUT | |

(14) Computer1 Analog



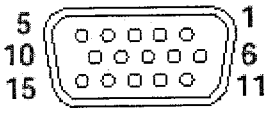

| No. | Pin name | No. | Pin name | No. | Pin name | No. | Pin name |
|---|---|---|---|---|---|---|---|
| 1 | R | 5 | GND | 9 | NC | 13 | H sync |
| 2 | G | 6 | R GND | 10 | GND | 14 | V sync |
| 3 | B | 7 | G GND | 11 | GND | 15 | SCL(DDC) |
| 4 | GND | 8 | B GND | 12 | SDA(DDC) | | |

(15) Computer1 Digital




| No. | Pin name | No. | Pin name | No. | Pin name | No. | Pin name |
|---|---|---|---|---|---|---|---|
| 1 | Data 2- | 7 | DDC Data | 13 | NC | 19 | GND |
| 2 | Data 2+ | 8 | NC | 14 | +5V Power | 20 | NC |
| 3 | GND | 9 | Data 1- | 15 | GND | 21 | NC |
| 4 | NC | 10 | Data 2+ | 16 | Hot Plug Datect | 22 | GND |
| 5 | NC | 11 | GND | 17 | Data 0- | 23 | Clock+ |
| 6 | DDC Clock | 12 | NC | 18 | Data 0+ | 24 | Clock- |

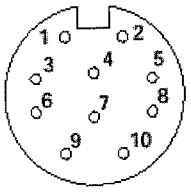
(16) Monitor Out




| No. | Pin name | No. | Pin name | No. | Pin name | No. | Pin name |
|---|---|---|---|---|---|---|---|
| 1 | R | 5 | GND | 9 | NC | 13 | H sync |
| 2 | G | 6 | R GND | 10 | GND | 14 | V sync |
| 3 | B | 7 | G GND | 11 | NC | 15 | NC |
| 4 | NC | 8 | B GND | 12 | NC | | |

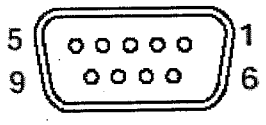
(17) Mouse 1/ Mouse 2

Pin functions differ depending on the mode used.




| No. | PS/2 Mouse | USB Mouse | ADB Mouse | Serial Mouse |
|---|---|---|---|---|
| 1 | Unused | Unused | +5V | DTR |
| 2 | GND | GND | GND | GND |
| 3 | Unused | D- | Unused | Unused |
| 4 | Unused | D+ | Unused | Unused |
| 5 | Unused | Unused | GND | GND |
| 6 | GND | Unused | Unused | GND |
| 7 | Unused | Unused | Unused | RTS |
| 8 | Unused | Unused | Unused | RD |
| 9 | DATA | Unused | Unused | Unused |
| 10 | CLK | Unused | ADB | Unused |

(18) Control (RS-232C)




| No. | Pin name | Remarks | No. | Pin name | Remarks |
|---|---|---|---|---|---|
| 1 | CD | | 6 | DSR | |
| 2 | RD | Receive data | 7 | RTS | Send request |
| 3 | TD | Send data | 8 | CTS | Response for transmission allowed |
| 4 | DTR | | 9 | RI | |
| 5 | GND | | | | |

# PARTS LIST

## CONTENTS

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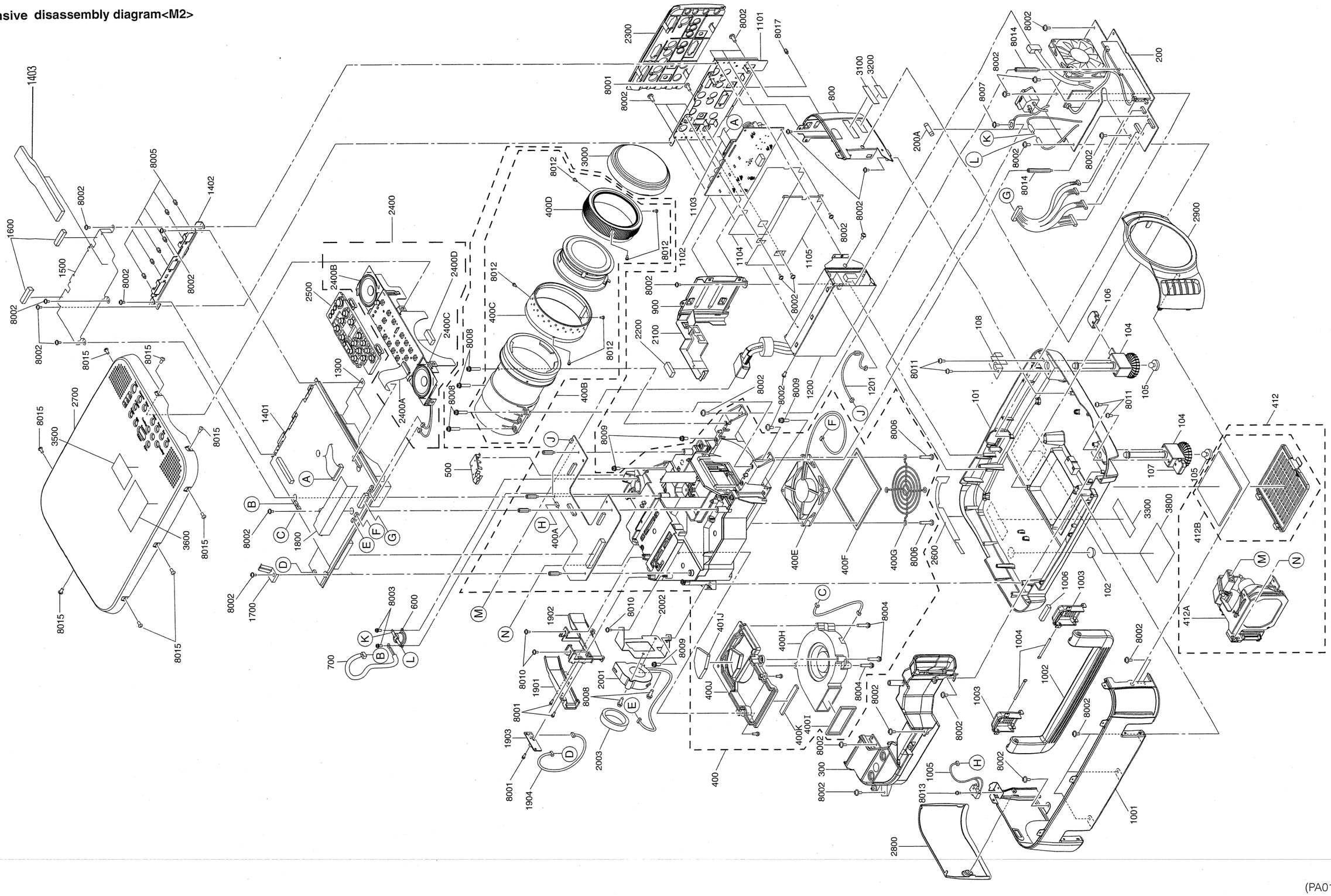
Packing and accessory assembly<M1> ..... 72

**Comprehensive disassembly diagram<M2>**



## Final assembly <M2>

| ⚠ | REF No. | PART No. | "PART NAME, DESCRIPTION" | |
|---|---|---|---|---|
| ⚠ | 101 | BHNE6005764 | BOTTOM CHASSIS | |
| | 102 | BHNE6001139 | REAR FOOT | |
| | 104 | BHNE1038263 | FOOT ASS'Y | X2 |
| | 105 | BHNE1039684 | FOOT RUBBER | X2 |
| | 106 | BHNE1038218 | FOOT LEVER L | |
| | 107 | BHNE1038219 | FOOT LEVER R | |
| | 108 | — | FOOT GND TERMINAL | |
| ⚠ | 200 | BHNE6004191 | POWER PWB ASS'Y | |
| ⚠ | 200A | QMF51D2-6R3J1 | FUSE | |
| | 300 | BHNE6004681 | EXHAUST DUCT | |
| | 400 | — | OPTICAL ENGINE | |
| | 400A | — | DRIVER PWB ASS'Y | |
| | 400B | — | RENS ASS'Y | |
| | 400C | BHNE6004262 | ZOOM RING | |
| | 400D | BHNE6004264 | FOCUS RING | |
| | 400E | BHNE6004927 | INTAKE FAN | |
| | 400F | BHNE6004269 | CUSHION F | |
| | 400G | — | FAN GUARD | |
| | 400H | BHNE6004346 | EXHAUST FAN | |
| | 400I | BHNE6004765 | DUCT SPONGE B | |
| | 400J | BHNE6004347 | LOWER DUCT | |
| | 400K | BHNE6004764 | DUCT SPONGE A | |
| | 401J | BHNE6004989 | LOWER DUCT MESH | |
| ⚠ | 412 | BHNEELPLP12-SA | LAMP SET | |
| | 412A | — | LAMP INNER HOUSING | |
| | 412B | BHNE6004187 | FILTER | |
| | 500 | — | LAMP CONNECTOR HOLDER | |
| ⚠ | 600 | BHNE6004350 | SAFETY SWITCH | |
| ⚠ | 700 | BHNE6004351 | LAMP THERMISTOR | |
| | 800 | BHNE6004194 | SIDE COVER L1 | |
| | 900 | BHNE6004384 | SIDE COVER L2 | |
| | 1001 | BHNE6004933 | SIDE COVER R | |
| | 1002 | BHNE6005767 | HANDLE | |
| | 1003 | BHNE6004200 | HANDLE COVER | X2 |
| | 1004 | BHNE6004201 | HANDLE SHAFT | X2 |
| | 1005 | BHNE6004078 | LAMP COVER SWITCH | |
| | 1006 | BHNE6005298 | CUSHION A | |
| | 1101 | — | IF FIXING PLATE | |
| | 1102 | BHNE6004924 | IF PWB ASS'Y | |
| | 1103 | BHNE6005044 | FFC CABLE | |
| | 1104 | BHNE6005108 | IF INSULATION PLATE | |
| | 1105 | — | IF SHIELD PLATE | |
| | 1200 | BHNE6004205 | BALLAST UNIT | |
| | 1201 | — | SCI CABLE | |
| | 1300 | — | SHIELD PLATE A | |
| | 1401 | BHNE6006032 | MAIN PWB ASS'Y | |
| | 1402 | — | REINFORCEMENT PLATE | |
| | 1403 | BHNE6005347 | PROTECTION CUSHION | |
| | 1500 | — | SHIELD PLATE B | |
| | 1600 | BHNE6005377 | SHIELD GASKET | X2 |
| | 1700 | — | GND TERMINAL | |

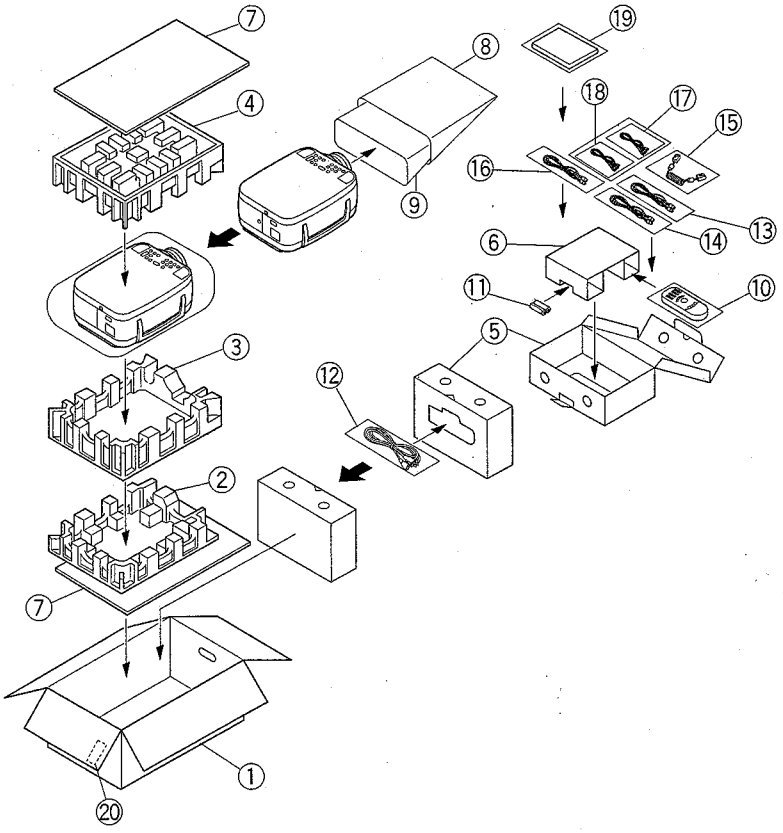
| | | | |
|---|---|---|---|
| 1800 | BHNE6004991 | PROTECTION SHEET | |
| 1901 | BHNE6004939 | REINFORCEMENT DUCT A | |
| 1902 | BHNE6004940 | REINFORCEMENT DUCT B | |
| 1903 | BHNE6000301 | RECEPTOR PWB ASS'Y | |
| 1904 | — | CABLE | |
| 2001 | BHNE6004928 | L FAN | |
| 2002 | — | LF FIXING PLATE | |
| 2003 | BHNE6004942 | LF CUSHION | |
| 2100 | — | REINFORCEMENT PLATE | |
| 2200 | BHNE6005320 | SHIELD GASKET | |
| 2300 | BHNE6004221 | IF PANEL UNIT | |
| 2400 | BHNE6004210 | SPEAKER UNIT | |
| 2400A | BHNE6004213 | FFC CABLE | |
| 2400B | BHNE6004214 | SPEAKER L | |
| 2400C | BHNE6004905 | SPEAKER R | |
| 2400D | BHNE6005106 | GASKET | |
| 2500 | BHNE6004212 | KEYTOP | |
| 2600 | BHNE6005297 | SHADING SHEET | |
| 2700 | BHNE6005601 | TOP COVER | |
| 2800 | BHNE6004947 | LAMP COVER | |
| 2900 | BHNE6004225 | FRONT COVER | |
| 3000 | BHNE6002791 | LENS CAP UNIT | |
| 3100 | BHNE6005607 | LOGO PLATE | |
| 3200 | BHNE6005608 | MODEL NAME PLATE | |
| 3300 | BHNE6005597 | CAUTION LABEL | |
| 3500 | BHNE6004974 | CAUTION LABEL | |
| 3600 | BHNE6004970 | CAUTION LABEL | |
| 3800 | BHNE6005594 | RATING LABEL(LX-D3000ZU) | |
| | BHNE6005595 | RATING LABEL(LX-D3000ZE) | |

| | | | |
|---|---|---|---|
| 8001 | BHNE1021824 | SCREW | X9 |
| 8002 | BHNE1021826 | SCREW | X38 |
| 8003 | BHNE1025172 | SCREW | X2 |
| 8004 | BHNE1028377 | SCREW | X3 |
| 8005 | BHNE1032134 | SCREW | X6 |
| 8006 | BHNE1032848 | SCREW | X2 |
| 8007 | BHNE1033025 | SCREW | |
| 8008 | BHNE1033711 | SCREW | X6 |
| 8009 | BHNE1033714 | SCREW | X4 |
| 8010 | BHNE1038273 | SCREW | X3 |
| 8011 | BHNE1039678 | SCREW | X4 |
| 8012 | BHNE6004263 | SCREW | X6 |
| 8013 | BHNE6004371 | SCREW | |
| 8014 | BHNE6004382 | SCREW | X2 |
| 8015 | BHNE6003075 | SCREW | X8 |
| 8016 | BHNE6005314 | SCREW | X2 |

OPTICAL ENGINE SHIPPING CASE

| | | |
|---|---|---|
| 1 | BHNE9001095 | SHIPPING CASE |
| 2 | BHNE9001096 | UPPER PAD |
| 3 | BHNE9001097 | LOWER PAD |
| 4 | BHNE9001098 | SPACER |
| 5 | BHNE9001099 | POLY BAG |

## Packing




## Packing and accessory assembly <M1>

| ⚠ | REF No. | PART No. | "PART NAME, DESCRIPTION" |
|---|---|---|---|
| | 1 | BHNE9001183 | CARTON BOX (LX-D3000ZU) |
| | | BHNE9001192 | CARTON BOX (LX-D3000ZE) |
| | 2 | BHNE9000782 | REINFORCEMENT PAD |
| | 3 | BHNE9000777 | LOWER PAD |
| | 4 | BHNE9000778 | UPPER PAD |
| | 5 | BHNE9000779 | ACCESORY BOX |
| | 6 | BHNE9000780 | ACCESORY HOLDER |
| | 7 | — | PANEL |
| | 8 | BHNE7541503 | POLYVINYL BAG |
| | 9 | BHNE7541504 | SOFT BAG |
| | 10 | BHNE6005542 | REMOTE CONTROLLER |
| | 11 | — | BATTERY X2 |
| ⚠ | 12 | BHNE2017328 | POWER CABLE (LX-D3000ZU) |
| | | BHNE6003818 | POWER CABLE (LX-D3000ZE) |
| | | BHNE6003745 | POWER CABLE (LX-D3000ZE UK TYPE) |
| | 13 | BHNE6002506 | RCA AUDIO CABLE |
| | 14 | BHNE6002507 | RCA VIDEO CABLE |
| | 15 | BHNE2022604 | COMPUTER CABLE |
| | 16 | BHNE2022956 | AUDIO CABLE |
| | 17 | BHNE6004964 | USB MOUSE CABLE |
| | 18 | BHNE6004965 | PS/2 MOUSE CABLE |
| | 19 | BHNE9001277 | USER'S MANUAL SET (LX-D3000ZU/ZE)*1 |
| | | BHNE9001280 | USER'S MANUAL SET (LX-D3001ZE)*2 |

"*1 Language:English, Francais"
"*2 Language:Deutsch, Italiano, Espanol"